Supplementary Detailed Site Investigation

Australian Rail Track Corporation Limited

Goulburn Roundhouse
12 Braidwood Road,
Goulburn NSW 2580

October 2023

Ref. 20025.76 R08v2

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Report Details

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Goulburn Roundhouse
12 Braidwood Road, Goulburn
New South Wales 2580

Ref: 20025.76 R08

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Executive summary

Cavvanba Consulting Pty Ltd was commissioned by Australian Rail Track Corporation Limited (ARTC) to undertake a supplementary detailed site investigation at the Goulburn Roundhouse, located at 12 Braidwood Road, Goulburn, New South Wales 2580 (herein referred to as the site). The site is currently used as a railway museum and actively operated as a Roundhouse by the Goulburn Locomotive Roundhouse Preservation Society Incorporated (GLRPS) and their sub-tenants for storage, restoration and maintenance of locomotives and rolling stock.

The overarching objectives of the works are to re-evaluate and supplement previous investigation data, and address the key issues raised by the Site Auditor and the New South Wales Environment Protection Authority. The proposed works will assist in reducing uncertainties in the assessment of remedial options, and regulation of the site.

To meet the project objectives, the scope of work included a soil, groundwater and surface water investigation at the site, comprising an investigation of soil at 80 locations, the installation of three groundwater monitoring wells, and a groundwater monitoring event of newly installed and existing monitoring wells on-site. Two surface water samples were collected from known roundhouse stormwater capture points on-site. This report also includes the interpretation of the findings of a stormwater and drainage investigation completed by ARTC.

Lead in soil

The distribution of lead contaminated soils based on all available data can be summarised as widespread but discontinuous within the southern and north-western portion of the site. The magnitude of which, varies due to a mosaic of historical activities and progressive infilling that has occurred on-site.

Asbestos containing material is widespread and extends into areas where access was previously obstructed due to the presence of rail-related infrastructure. This includes beneath locomotives and rolling stock on railway lines within the southern portion of the site and in filled areas on the eastern side of the roundhouse (Bays 1 to 15). The presence of asbestos containing material (ACM) on soils exceeds health screening levels for asbestos.

Asbestos containing material was identified in soils within filled areas to the east of the roundhouse and adjacent to the north of the administration building. These were areas where ACM has not been previously identified.

Following the investigation, a hand-picking asbestos management exercise was undertaken (June 2023) in an effort to reduce the hazard from the surface soils. These management measures should be continued in accordance with the interim environmental management plan (IEMP).

Groundwater

Groundwater standing water levels (SWLs) measured in metres below the top of the casing (mBTOC) (approximately flush to surface), ranged from 4.190 m (MW102) in the north-eastern portion of the site, to 7.365 m (MW02), in the north-western portion of the site which were reported to have lowered since the 2022 monitoring event with an average decrease of 0.7 m recorded across the site. The measured standing water levels and calculated groundwater elevations indicate groundwater flow is consistent with that previously reported, predominantly flowing in a north-easterly direction.

The nature and extent of groundwater contamination can be summarised as follows:

- *Light Non-Aqueous Phase Liquid (LNAPL was identified at a measurable thickness of 0.53 m at MW06, an increase of 0.37 m from the previous monitoring event. Its presence is localised, unlikely to represent a vapour intrusion risk and likely associated with residual LNAPL saturation rather than an ongoing source;*
- *all groundwater samples collected on-site were reported below the adopted health screening levels for vapour intrusion;*
- *Total Recoverable Hydrocarbon (TRH) concentrations at MW02, adjacent to the refuelling gantry remain low and localised in extent, however are likely to be artificially reduced by the previously identified potable water influence;*
- *Volatile Organic Compounds (i.e. TCE / DCE) were not detected above the laboratory limit of reporting;*
- *Sum of perfluorooctane sulfonate (PFOS) and perfluorohexane sulfonate (PFHxS) were detected in groundwater on-site, at a maximum concentration of 3.05 µg/L, however its presence in groundwater is unlikely to represent an unacceptable risk to ecological receptors off-site; and*
- *chromium (VI) was detected in groundwater at a maximum concentration of 30 µg/L, and whilst it has not been delineated off-site, is unlikely to represent an unacceptable risk.*

Stormwater and drainage

The stormwater and drainage system connects the repair bays within the Roundhouse building to the former effluent treatment plant via underground infrastructure such as the API separator and arrestor pits. Whilst gross contamination has not been identified to be mobilising off-site due to the presence of arrestor pits and API separators, there are some data gaps which remain outstanding.

TRH was detected in surface water on-site, at a maximum concentration of 1,900 µg/L, and PFOS at a maximum concentration of 0.03 µg/L. The significance of these exceedances and whether a potential unacceptable risk to ecological receptors off-site remains uncertain based on the current dataset.

Summation

Through the development and continual refinement of the conceptual site model, potentially complete source-pathway-receptor linkages resulting in a potential risk to human health and the environment have been identified which require further monitoring, remediation and/or appropriate management. These are discussed in Table 1, below.

Table 1: Data gaps summation and recommendations

Data Gaps summation	*Recommendation*
1) Groundwater contamination (TRH, PFAS and chromium) *The varying magnitude and trends of TRH in groundwater within the vicinity of the former diesel refuelling gantry and the Roundhouse where active maintenance is occurring remains a data gap. Additional uncertainty is introduced through the increase in LNAPL thickness at MW06, and potential for TRH rebound at MW02. Additionally, there are uncertainties regarding the source or sources of PFAS and the plume geometry.* *These uncertainties make groundwater remediation decision making premature.*	*Preparation of a formal groundwater monitoring plan, and continue with routine groundwater monitoring to:* – *ensure that any changes in contaminant concentrations can be detected;* – *demonstrate plume stability, or otherwise; and* – *ensure the appropriate protection of groundwater human and ecological health.* *Assess the feasibility of LNAPL removal.*

Cavvanba considers that these uncertainties can be rectified through future routine and planned groundwater monitoring events, and should be undertaken to assist decision making regarding remediation options. It is possible that for TRH, the outcome will be passive remediation such as monitored natural attenuation. The feasibility of LNAPL removal at this stage is unknown.	
2) Site infilling and waste disposal areas *Cavvanba considers that the nature and extent of buried waste material within the eastern and southern portion of the site has been established, sufficient to facilitate future remediation and/or management options for this area.*	*Development of remediation and/or management options to ensure the protection of human and ecological health, focussing on the removal of the potential exposure pathway.*
3) Asbestos in and on soil *There is adequate information to facilitate future remediation and/or management options for ACM on-site.*	*Implement interim management measures as per the updated Interim Management Plan (Cavvanba, 2022), and development of remediation and/or management options to ensure the appropriate protection of human health. Consider measures in conjunction with data gap 2.*
4) Site history *The site has a long and complicated history with over 100 years of heavy industrial activity, and a change in site operations and management from approximately 1989 when the GLRPS acquired the lease. Whilst it is acknowledged that there are inherent uncertainties in the site history, Cavvanba considers that there is sufficient soil and groundwater data and information to support the development of remediation options for the site.*	*Predominantly reconciled, however consideration should be given to obtaining historical information relating to the potential use of PFAS containing products.*
5) Stormwater and drainage *Cavvanba's understanding of the stormwater and drainage network on-site has been sufficiently established through the data gathered as part of this investigation. However, uncertainties remain associated with the integrity of the pipework at the southern discharge point, and whether there are resultant soil and groundwater contamination issues. This also includes the chemical composition of stormwater at the discharge point and is particularly relevant given the presence of TRH, and PFAS in excess of the 99% species protection levels.*	*The railway maintenance bays within the roundhouse must not be used for any chemical / oil collection (no products to ground) until such time that the network is deemed fit for purpose.* *Surface water sampling within the holding tanks at the discharge point on the eastern side of Braidwood Road (refer to Figure B of Appendix A). Assessment of groundwater conditions within the areas of known integrity issues, being the southern discharge point.*

1.0 Introduction

Cavvanba Consulting Pty Ltd (Cavvanba) was commissioned by Australian Rail Track Corporation Limited (ARTC) to undertake a Supplementary Detailed Site Investigation (DSI) at the Goulburn Roundhouse, located at 12 Braidwood Road, Goulburn, New South Wales (NSW) 2580 (herein referred to as the site). The site location is presented on Figure 1.

The scope of work and methodology was consistent with that detailed within Cavvanba's letter proposal titled '*Contaminated land consulting services – Goulburn Roundhouse, 12 Braidwood Road, Goulburn NSW 2580*' submitted to ARTC on 22 February 2023 (Cavvanba Ref: P20025.76.5). This report should be read in its entirety, with specific reference to Cavvanba's *General Limitations*, included as Section 1.4.

1.1 Background

The site has over 100 years of industrial activity having officially opened as an operational railway Roundhouse by the NSW Government Railways in 1918, with railway maintenance activities commencing at the site in approximately 1869. The site has been used to maintain a large portion of the railways fleet of steam locomotives, followed by diesel locomotives being maintained at the site from the 1950's until its closure in 1981. The site is currently used as a railway museum and actively operated as a Roundhouse by the Goulburn Locomotive Roundhouse Preservation Society Incorporated (GLRPS) and their sub-tenants for storage, restoration and maintenance of locomotives and rolling stock. GLRPS opened the Goulburn Rail Heritage Centre at the site in approximately 1989.

Previous contaminated land investigations have identified contamination at the site, primarily being asbestos containing material (ACM) and lead in soil, and petroleum hydrocarbons in groundwater, as listed in Section 1.1.2 below. Cavvanba has been involved in a staged investigation process at the site since 2020, which has included:

- interim environmental management plan, for implementation whilst additional characterisation is undertaken;
- detailed site investigation (DSI) which reviewed previous investigation data, identified data gaps and refined the conceptual site model (CSM) through an investigation of soil and groundwater across the site;
- additional environmental site assessment (Additional ESA) which further refined the CSM through an investigation of soil and groundwater and addressing data gaps previously identified;
- remediation options assessment (ROA) based on the data collected to evaluate options and costs for rendering the site suitable for ongoing commercial / industrial use and what data gaps remain outstanding;
- groundwater monitoring to further assess the nature and magnitude of groundwater contamination; and
- communication, review and liaison with stakeholders including a NSW Environment Protection Authority (EPA) accredited Site Auditor for contaminated land.

This Supplementary DSI is the next stage of the investigation process and has been completed to address data gaps identified by Cavvanba during the additional characterisation, reduce uncertainties in the assessment of remedial options and regulation of the site. It is also to address NSW Environment Protection Authority (EPA) and Site Auditor comments on the investigations and assessments to date.

1.1.1 Interim management plan

The Interim Environmental Management Plan was prepared by Cavvanba in September 2020 to ensure that all practicable steps were taken to minimise the potential risk of exposure to potential asbestos containing material and lead contamination at the site prior to the outcome of the DSI. As required, the plan was then updated in April 2021 and again in May 2023 based on additional characterisation achieved during subsequent investigations and assessments.

The current interim environmental management plan (IEMP) (Ref. 20025.76 R07) (Cavvanba, May 2023) will be updated for the site following the completion and review of this Supplementary DSI.

The IEMP requires ACM hand-picking events to be undertaken to reduce the ACM hazard on the site. Refer to Section 3.3 for additional detail regarding the events to date.

1.1.2 Regulatory status

The site was declared significantly contaminated land by the NSW EPA on 14 February 2023, and is subject to Declaration Notice No. 20221108, issued under Section 11 of the of the CLM Act. The EPA had reason to believe that the land is significantly contaminated as a result of the historical use of the site as a locomotive storage and maintenance facility and use of fill contaminated with lead. Specifically, the site warrants regulation because of the following:

- Lead contamination in soil on the site is widespread and high concentrations of lead (in order of thousands of mg/kg) have been detected in surface soils (the top 0-0.05m), which presents a potential ingestion and dermal contact risk to onsite workers and occupants.

- Chromium contamination in groundwater is present and has been recorded in downgradient wells on the eastern border of the site. This indicates that chromium in groundwater is potentially migrating offsite, which presents a potential ecological risk.

- Additional contaminants have been detected in the site groundwater in 2022. Further investigation is required to determine the source and risk of these contaminants.

The site is now regulated under an Approved Voluntary Management Proposal (VMP) with the NSW EPA, VMP No. 20231709, dated 6 July 2023. A principal feature of the VMP is the delivery of this Supplementary DSI report prior to 30 November 2023.

1.2 Objective

The overarching objectives of the works are to re-evaluate and supplement previous investigation data, and address the key issues raised by the Site Auditor and the NSW EPA. The proposed works will assist in reducing uncertainties in the assessment of remedial options, and regulation of the site.

1.3 Scope of work

To achieve the objectives outlined above, the following scope of work was prepared based on the requirements of a variety of guidance documents, including, but not limited to the following:

- NSW EPA (2020) *Consultants Reporting on Contaminated Land*;
- NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd edition)*;
- *National Environment Protection Council (NEPC) National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM (2013)) – Schedule B2: Guideline on Site Characterisation* (2013); and
- *National Chemicals Working Group of the Heads of EPAs (HEPA) (2020) PFAS National Environment Management Plan Version 2.0* - January 2020 (NEMP).

The scope of the investigation included the following activities:

- A review of, and response to Site Auditor comments which guided the completion of the Data Quality Objectives for this supplementary DSI.
- Development of data quality objectives (DQOs) based on the known information inputs, expected site conditions and the project objectives.
- Development of a sampling plan which complemented the DQOs.
- Completion of a site walkover and visual inspection for key features, and to provide for any necessary improvements in the investigation design.
- A review of, and interpretation of updated stormwater and drainage information provided to Cavvanba by ARTC.
- Collection of 48 surface samples using hand tools within the four-foot of existing railway infrastructure and within areas not previously assessed across the site.
- Advancement of 14 boreholes to a maximum depth of 8.0 metres (m) using a combination of hand auger and/or mechanical drilling techniques.
- Advancement of 18 test pits using hand tools within areas not previously assessed across the site.
- Collection and sieving of 10 L samples at all borehole and test pit locations on-site.
- Logging of the lithology at each location by an experienced Cavvanba environmental engineer with soil samples collected for laboratory analysis at various depth intervals until termination.
- Conversion of three boreholes to groundwater monitoring wells.
- Development and purging of newly installed groundwater monitoring wells to enable the collection of groundwater samples considered representative of the surrounding aquifer.
- Gauging and sampling of all newly installed and existing groundwater monitoring wells using low flow sampling techniques.
- Collection of two surface water samples from known roundhouse stormwater capture points.
- Submission of soil, groundwater and surface water samples to a National Association of Testing Authorities (NATA) accredited laboratory for analysis of actual and potential contaminants of concern (COCs).
- Survey of the newly installed groundwater monitoring wells to metres Australian Height Datum (AHD) and eastings and northings by a registered surveyor.
- Preparation of this Supplementary DSI report.

An ACM hand-picking event was undertaken following the abovementioned scope. For completeness, this has been summarised in Section 11.1 of this report and included as Appendix I.

1.4 Limitations

The findings of this report are based on the objectives and scope of work outlined above. Cavvanba performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties or guarantees, express or implied, are made. Subject to the scope of work, Cavvanba's assessment is limited strictly to identifying typical environmental conditions associated with the subject property, and does not include evaluation of any other issues. This report does not comment on any regulatory obligations based on the findings, for which a legal opinion should be sought. This report relates only to the objectives and scope of work stated, and does not relate to any other works undertaken for the Client.

The report and conclusions are based on the information obtained at the time of the assessment. Changes to the subsurface conditions may occur subsequent to the investigation described herein, through natural processes or through the intentional or accidental addition of contaminants, and these conditions may change with space and time.

The site history, and associated uses, areas of use, and potential contaminants, were determined based on the activities described in the scope of work. Additional site history information held by the Client, regulatory authorities, or in the public domain, which was not provided to Cavvanba or was not sourced by Cavvanba under the scope of work, may identify additional uses, areas of use and/or potential contaminants. The information sources referenced have been used to determine site history and desktop information regarding local subsurface conditions. While Cavvanba has used reasonable care to avoid reliance on data and information that is inaccurate or unsuitable, Cavvanba is not able to verify the accuracy or completeness of all information and data made available.

Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history, and which may not be expected at the site. The absence of any identified hazardous or toxic materials on the subject property, should not be interpreted as a warranty or guarantee that such materials do not exist on the site. If additional certainty is required, additional site history or desktop studies, or environmental sampling and analysis, should be commissioned.

The results of this assessment are based upon site inspection and fieldwork conducted by Cavvanba personnel and information provided by the Client. All conclusions regarding the property area are the professional opinions of the Cavvanba personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Cavvanba assumes no responsibility or liability for errors in any data obtained from regulatory agencies, information from sources outside of Cavvanba, or developments resulting from situations outside the scope of this project.

2.0 Site setting

2.1 Site identification and description

The site consists of a single lot, identified as Lot 2 in Deposited Plan (DP) 1002813. The total site area is 46,390 m^2 and is located to the south of the Goulburn central business district, and immediately adjacent to the east of the Main South Railway line.

Access to the site is from Braidwood Road via a sealed asphalt access road in the central portion of the site and the remainder is otherwise unsealed gravel access roads, railway lines or fill material comprising coal and ash. Grass cover is present within the southern and eastern portion with sporadic vegetation and larger trees within isolated areas of the site. A chain link and temporary fence limits unrestricted access to the site from Braidwood Road. The site layout has been presented on Figure 2.

The site identification and land use details are provided below.

Site Owner:	Transport for New South Wales (TfNSW) via Transport Asset Holding Entity (TAHE)
Site Manager:	ARTC
Lessee	GLRPS
Sub-lessee	Various short-term leases
Site Address:	12 Braidwood Road, Goulburn NSW 2580
Legal Property Description:	Lot 2 in DP 1002813
Property area:	Approximately 46,390 m^2
Co-ordinates:	Latitude: -34.773891 Longitude: 149.710899
Local Government Authority:	Goulburn – Mulwaree Council.
Elevation:	Approximately 638 metres (m) Australian Height Datum (AHD).
Landuse – Proposed:	Commercial / Industrial
Zoning:	IN1 – General Industrial

2.2 Surrounding land use

Land use features surrounding the site are summarised below:

North:	The railway corridor extends to the north of the site. Immediately north is the CFCL Australia Rail Services maintenance facility, located within the railway corridor. It is understood that this facility is used for the overhaul, maintenance, modification and painting of locomotives and rolling stock.

	A number of commercial properties, including an automotive wreckers and engineering depot are located beyond the CFCL site, followed by residential properties.
East:	Braidwood Road borders the site to the east followed by a rural residential property and agricultural land. The Mulwaree River is located approximately 570 metres from the site boundary. An open stormwater drainage channel (located to the northeast of the site) traverses the agricultural land which links surface water drainage from the site to the river. This has been highlighted in Figure 1.
South:	The Hume Highway is located immediately south of the site followed by rural residential properties and agricultural land.
West:	The Main South Railway line borders the site to the west, followed by former railway stockyards within the Goulburn Wheat Yard Sidings railway corridor. A nursery, a livestock sale yard and agricultural land are located beyond Sloane Street to the west. An Ampol Truck Stop and fuel depot, and former fuel depot are located to the southwest of the site on Sloane Street.

2.3 Site history

The railway line from Marulan to Goulburn opened on 27 May 1869 and a railway depot was constructed by the NSW Government Railways on the southern outskirts of town at this time. It is understood that this included the construction of the engine shed at the site. The NSW Government Railways opened the Goulburn Roundhouse in 1918, which replaced an earlier locomotive depot and consisted of a 42-road Roundhouse. Both new and old locomotive depots operated simultaneously until 1935. The old depot was demolished in 1941, however Cavvanba understands that this depot was not located on the site.

The Roundhouse was closed in 1981 and leased to the Goulburn City Council for use by a historical society to restore and maintain heritage locomotives, railway vehicles and railway orientated machinery and equipment. A summary of key current and historical site features has been summarised within *Detailed Site Investigation* (Cavvanba, 2021a) and as such, has not been reproduced within this report.

2.4 Environmental setting

2.4.1 Topography and hydrology

The site is situated at approximately 638 m AHD within the Southern Tablelands region of NSW. The site area is relatively flat with the broader area surrounding the site sloping the east and north towards the Mulwaree River. An escarpment is located to the west of the site beyond Sloane Street which is present at an elevation approximately 40 higher than the site.

Surface water on-site is understood to be predominantly uncontrolled and would generally pool on-site and permeate the unsealed ground surface that covers the site, however in moderate – heavy rainfall surface water would follow the local topography and drain towards Braidwood Road away from the rail corridor and eventually into the municipal stormwater system. Cavvanba understands that the municipal stormwater system discharges to the Mulwaree River via an open stormwater drainage channel located on the eastern side of Braidwood Road, approximately 70 m northeast of the site, and is presented on Figure 1.

More broadly, surface water is expected to flow east eventually discharging to the Mulwaree River approximately 570 m from the site boundary. The Mulwaree River flows into the Wollondilly River, located approximately 3.8 kilometres (km) north of the site.

It is noted that an open drainage line is also located immediately adjacent to the south of the site, as presented on Figure 1. However, based on the orientation and layout of the site, surface water is not anticipated to drain to this area.

Roundhouse stormwater and drainage

Jeffrey and Katauskas Pty Ltd (J&K) was commissioned by the NSW Department of Public Works and Services in 1997 to undertake an Environmental Investigation at the site which included an assessment of the effluent, sewerage and stormwater system at the site. The J&K (1997) drainage figure has been provided as Figure A of Appendix A.

The following key findings were noted by J&K in 1997:

- The site drainage system was likely installed during the construction of the site, which appeared to have been designed to accommodate both effluent and stormwater drainage. The system as a whole has been continuously modified since installation.

- The system was based on the passage of effluent through arrestor pits, which acted as a separator for floating oily contaminants and sediment. Various oil collection devices were installed within the separators, with floating contaminants subsequently collected and drummed for disposal.

- The effluent system was reported to have been modified to accept oily water related to diesel refuelling operations which formed part of three main sections, being the East, Central and West Drainage lines, as presented in Figure A.

- In 1981, the site was closed, and new workshops were constructed. During this time, the Effluent Treatment Plant and a sewage pumping station were installed to accommodate effluent from the new workshops. The Effluent Treatment Plant consisted of a dosing and sedimentation facility together with oil separation equipment and a sludge drying bed. The Effluent Treatment Plant has been decommissioned, with a significant portion of the pipework either removed or disconnected.

- A number of arrestor facilities have been installed at the site, and based on the J&K investigation, only one remained intact, being the API & Differential Separator ('C' on drainage figure) and in apparent working order. This was referred to as the main operational arrestor pit which was fitted with pumps and a differential separator facility. It was reported that at the time of the J&K investigation (1997) Freight Rail Corporation held a licence from the EPA to discharge from the separator into the nearby waterway.

- J&K reported that the entire drainage system was in poor condition and of questionable operation. Significant modification of the system was reported which resulted in partial blockage and potential leaks. Due to the decommissioning of the Effluent Treatment Plant, the remaining system was reported to be of a relatively small capacity for the size of the site, resulting in significant overloading during periods of heavy rainfall.

The nature and fate of stormwater from the Roundhouse building on-site is further discussed as an outcome of this investigation in Section 6.4.

2.4.2 Soils and geology

Soils

Based on a review of the *Atlas of Australian Soils*, soils beneath the site are characterised as Sodosol described as the following:

> *Sodosol: Undulating to hilly country: chief soils are hard neutral and acid yellow mottled soils (Dy3.42 and Dy3.41) in a general pattern as follows: (i) undulating to hilly slopes of various (Dy) and (Dr) soils, including (Dy3.41), (Dy3.42), (Dy3.2), (Dr2.2), (Dr2.4); (ii) (Dy3.42) and sometimes (Dr3.42) soils in basins which merge with unit Va21 and lower-lying sites generally; and (iii) less frequently (Gn2. 15) and (Gn2.25) soils on gently undulating areas, usually situated between (i) and (ii).*

The soil profile observed during the DSI and Additional ESA were reported to consist of fill material which was reported to extend to depths of up to 2.5 m on-site, comprising spent coal ash and/or coal fragments, ACM and other buried waste material. Natural sandy clays and clays were reported to underlay fill material at the site to the maximum depth of investigation, being 10.0 m (Cavvanba, 2021a).

Geology

According to the *Goulburn 1:250,000 Geological Series Sheet 55-12* (Second Edition, 2013), the site is underlain by Cainozoic Aged alluvium consisting of gravels and sands overlying Palaeozoic Aged Gundary beds consisting of sandstone, siltstone volcanic mudstone and lithic-quartz sandstone.

2.4.3 Hydrogeology

According to the groundwater monitoring event completed by Cavvanba in February 2022, groundwater beneath the site was observed to be present within an unconfined water bearing zone in natural clays and sandy clays at depths of between approximately 3.5 m to 6.7 m below ground level. Groundwater was shallowest in the north-eastern portion of the site.

Groundwater elevations indicated that groundwater flow was predominantly in a northerly direction, generally aligning with the general topographic slope of the site and towards the Mulwaree and Wollondilly River.

It is important to note that groundwater flow direction can be influenced locally and regionally by not only surface topography, but recharge and discharge areas, horizontal and vertical inconsistencies in the types, location and orientation of subsurface soils or bedrock, and proximity to water extraction / pumping bores.

Groundwater Bore Search

A total of five registered groundwater bores were located within a 1,000 m radius of the site (Cavvanba, 2021a). Groundwater bore information from these bores has been provided within Table 2.1, below.

Table 2.1: Licensed bore summary

Bore ID	Registered use	Distance from site (m)	Geology	Depth (m)	Standing water level (m)
GW105739	Stock / Domestic Purposes	~195m (South)	Sand / Gravel / Clay	78.00	2.00
GW110381	Recreation (groundwater)	~689m (Northeast)	Gravel / Clay / Siltstone	54.00	5.00
GW064585	Stock / Domestic Purposes	~765m (North)	Clay / Gravel / Shale	15.80	-
GW071524	Monitoring	~887m (North)	Silty Sand / Silty Clay	6.50	5.30
GW102093	Domestic	~907m (Northeast)	Sandy Clay / Gravel / Shale	27.40	0.60

3.0 Previous environmental investigations

A review of previous environmental investigations was completed and summarised as part of the DSI (Cavvanba, 2021a). This was built upon in the most recent investigations reported in the Additional ESA (Cavvanba, 2021d), which is summarised below. Since the ESA in 2021, there has been a groundwater monitoring event completed in February 2022, two asbestos management events, and a waste assessment of grit blasting media. A brief summary of these is also provided below.

Relevant information and the associated data were used to facilitate the DQO process for this Supplementary DSI.

3.1 Additional environmental site assessment

Cavvanba was commissioned by ARTC to undertake an Additional ESA at the site, as reported in *Additional Environmental Site Assessment – Goulburn Roundhouse, 12 Braidwood Road, Goulburn NSW 2580* (Cavvanba, 2021d).

The objectives were to supplement previous investigation data following the DSI, and further understand and delineate contamination associated with the following data gaps:
- the presence and significance of total recoverable hydrocarbons (TRH) in groundwater;
- the nature and extent of site infilling and waste disposal areas;
- the nature and extent of asbestos in and on soils; and
- where achievable, further understand the site history, features and operations to determine whether further investigation is warranted.

The scope of works included the drilling and installation of groundwater monitoring wells at five locations for plume delineation purposes, advancement of thirty test pits to a maximum depth of 2.5 m and gauging and sampling of all newly and existing groundwater monitoring wells.

The following key findings were identified:

TRH in groundwater

- There was no evidence of gross petroleum hydrocarbon contamination observed in soil during the delineation of petroleum hydrocarbon impacts in the vicinity of the former diesel refuelling gantry (MW02).

- Petroleum hydrocarbon concentrations in monitoring well MW02 were reported to be limited in extent, having been delineated by a reduction in dissolved phase concentrations to the north, and absence of detectable petroleum hydrocarbon concentrations in existing and newly installed monitoring well locations located down and cross-hydraulic gradient (MW09 to MW12). However, some uncertainty remained regarding the two orders of magnitude reduction in contaminant concentrations and presence of trihalomethanes in groundwater at MW02.

Site infilling and waste disposal

- Test pit locations were advanced to delineate waste disposal areas previously identified in the DSI.

- Lead was reported to exceed the health investigation level of 1,500 mg/kg at one location, within the known fill area to the east of former workshop / machine shop. Lead concentrations in soil were reported below the adopted health investigation level in all other samples collected from surficial soils and fill material as part of this investigation.

- Asbestos containing material was identified in soil at one test pitting location. Non-friable asbestos containing material was present within fill material from a depth of 1.7 m within the known fill area adjacent to the former workshop / machine shop in the southern portion of the site. Potential asbestos containing material fragments were not identified within any other test pitting locations advanced as part of the Additional ESA.

Groundwater monitoring

- Evidence of Light Non-Aqueous Phase Liquid (LNAPL) was not observed.

- Groundwater analytical concentrations were reported below the applicable CRC CARE HSLs for vapour intrusion.

- Dissolved phase hydrocarbon impacts were reported to be limited in extent, having been delineated by monitoring wells located within the site boundary.

Through the development and continual refinement of the conceptual site model, potentially complete source-pathway-receptor linkages resulting in a potential risk to human health receptors under a commercial/industrial land use scenario were identified which required further monitoring, remediation and/or appropriate management.

Outstanding data gaps included the following:
- the varying magnitude and trends of TRH in groundwater, particularly surrounding the former refuelling gantry and roundhouse where active maintenance was occurring;
- the integrity of the subterranean waste oil network within the roundhouse; and
- the complicated site history and operational changes on-site, and how this is contributing to on-site soil and groundwater contamination.

3.2 Groundwater monitoring event – February 2022

A groundwater monitoring event was undertaken in February 2022 based on recommendations outlined within the Additional ESA (Cavvanba, 2021d). The primary objective of the works was to re-evaluate groundwater conditions to further assess the nature and magnitude of TRH concentrations in groundwater, and whether further investigation was considered warranted.

The scope of works included groundwater level gauging and sampling at fourteen groundwater monitoring well locations. One sample of LNAPL collected from MW06 was also submitted for fingerprinting analysis.

The following key findings were identified:

- Groundwater standing water levels (SWLs) measured in metres below the top of the casing (mBTOC) (approximately flush to surface), ranged from 3.480 m at MW10 in the north-eastern portion of the site, to 6.711 m at MW02, in the north-western portion of the site. SWLs were reported to have increased since the 2020 monitoring event, with an increase of 2.1 m recorded at well locations MW05 and MW06.

- LNAPL was identified at a thickness of 0.16 m at monitoring well MW06, located adjacent to the Roundhouse building. LNAPL had not previously been detected at the site.

- Based on the hydrocarbon fingerprinting analysis performed, the LNAPL was reported to have a chromatographic profile typical of a mixture of severely biodegraded kerosene and diesel, or possibly degraded light fuel oil. It was further stated that the product was likely from a historic loss and not from a new or fresh release of product into the environment, with an estimated time of between 29 and 47 years.

- All remaining groundwater samples collected on-site were reported below the adopted CRC CARE health screening levels for vapour intrusion. The magnitude of the reported TRH detections were consistent with the groundwater monitoring event completed as part of the ESA (Cavvanba, 2021d).

- Trichloroethene (TCE) and cis-1.2-Dichloroethene (DCE) were detected in groundwater at one monitoring well location (MW12). DCE was reported below the NHMRC (2011) ADWG value of 60 µg/L. TCE and/or DCE had not previously been detected in groundwater within any of the monitoring wells sampled on-site.

- The presence of dissolved phase petroleum hydrocarbon concentrations in groundwater at MW02 within the vicinity of the former refuelling gantry had reduced by two orders of magnitude since the installation of this monitoring well in 2020. Consistent with the findings of the Additional ESA (Cavvanba, 2021d), petroleum hydrocarbon concentrations at this location were considered to be limited in extent.

The presence of LNAPL within MW06, and TCE and DCE in MW12, both of which had not previously been detected on-site, introduced uncertainties in the current conceptual site model. Whilst an immediate risk to human health and/or the environment was considered unlikely, further investigation, including ongoing groundwater monitoring was recommended to determine the nature and extent of the identified impacts and to ensure the appropriate protection of groundwater human and ecological health.

3.3 Interim asbestos management

Cavvanba was commissioned by ARTC to conduct site inspection and ACM hand-picking exercises at the site in accordance with the requirements of the interim environmental management plan.

A hand-picking exercise was undertaken in February 2022. It was completed within the south-eastern portion of the site only, between the perimeter fence line and Braidwood Road. A total of 30 fragments of potential ACM were identified and removed as part of the works. All fragments were identified within the known fill area to the east of former workshop / machine shop.

At the time of reporting, an additional event has taken place, in June 2023, following the completion of the Supplementary DSI sampling and analysis program. The outcome of this is described in Section 11.1.

3.4 Grit blasting media

Cavvanba was commissioned by ARTC to undertake a waste classification assessment to support the off-site disposal of spent grit blasting media used at the site. The material was stored within the abrasive blasting area, as presented on Figure 2. The following key findings were noted:

- Approximately 35 m^3 of grit blasting media was present, being stored within a shed-like enclosure with a concrete base.

- Elevated heavy metal concentrations were present within the material, with the following maximum concentrations reported:
  - lead at 6,400 mg/kg;
  - chromium at 470 mg/kg; and
  - nickel at 210 mg/kg.

4.0 Data quality objectives

Prior to commencement of the intrusive investigation program, Data Quality Objectives (DQOs) were established for the project in line with the requirements and process outlined in NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd edition)*.

These DQOs were developed to define the type and quality of data required from the site investigation program to achieve the project objectives outlined in Section 1.2. The DQOs were selected with reference to relevant guidelines published by the NSW EPA, Australian and New Zealand Environment and Conservation Council (ANZECC) and National Environment Protection Council (NEPC), which define minimum data requirements and quality control procedures. These decision rules were developed to refine the objectives of the data collection investigation, to ensure the data collected was representative and provided the necessary data to allow the evaluation of the sites land use suitability and assist in the development of remediation options.

The seven-step DQO approach, as identified in NSW EPA (2017) document, as applied to this assessment, is included as Appendix B.

5.0 Site investigation

The fieldwork program was undertaken in accordance with the DQOs, by Mr Zac Laughlan and Mr Cam Campbell of Cavvanba in April 2023. The fieldwork program comprised of the following:

- test pitting, hand auguring and soil sampling between 18 to 20 April;
- drilling, soil sampling and monitoring well installation on 20 and 21 April; and
- groundwater monitoring event on 26 and 27 April.

5.1 Stormwater and drainage investigation

Aqua Assets Pty Ltd was commissioned by ARTC to complete a stormwater and drainage investigation at the site in conjunction with, and in addition to the investigation works described herein. The works were completed as two separate events, in June and August 2023 and included the use of closed-circuit television (CCTV) pipeline inspections, drainage cleaning (combination water jet / vacuum) and pipeline repairs. The findings of these investigation works completed by ARTC and Aqua Assets were provided to Cavvanba in August 2023.

5.2 Rationale for sampling design

The investigation strategy was designed to further characterise and delineate known contamination areas, and within areas not previously investigated or where there was limited spatial coverage. A visual appraisal of surface soils for the presence / absence of ACM was also completed within the vicinity of each sampling location.. The rationale for the investigation can be summarised as follows:

Soil

- ***Railway lines on-site***. A total of seven railway lines are present in the southern portion of the site, which are used as sidings to store locomotives and rolling stock. These railway lines have the ability to combine to form a single rail line which extends from the southern-most portion of the site to the northern portion (and off-site) via the roundhouse and turntable. The railway lines on-site were not previously investigated.

  Surface soil sample locations were completed on a linear sampling pattern within the four-foot at an approximate rate of 1 sample per 33 m to appropriately characterise this feature. The exception to this was borehole location BH108, located within the roundhouse which was positioned immediately adjacent to the railway line to target borehole '5' completed by J&K in 1997. A total of 34 surface soil locations and 2 boreholes were completed to target this feature.

- ***Southern portion of the site***. Further characterisation within areas of limited spatial coverage and within areas not previously assessed.

  A total of eleven test pits were excavated using hand tools within this area.

- ***North of the roundhouse***. Further characterisation within an area of limited spatial coverage.

  A total of three boreholes and five surface soil locations were completed to further characterise this area.

- ***Northern portion of the site***. Further characterisation within an area of limited spatial coverage.

A total of two surface soil locations and five test pits were excavated using hand tools within this area.

- ***East of the roundhouse and surrounding the administration building***. Further characterisation within an area of limited spatial coverage.

  A total of seven surface soil locations, six boreholes and two test pits were excavated using hand tools within this area.

Groundwater

- ***Decommissioned diesel aboveground storage tanks and effluent treatment plant***. Further characterisation within an area of limited spatial coverage.

  A total of three groundwater monitoring wells were installed within accessible areas on-site to target these features.

- ***Groundwater monitoring event of all existing monitoring wells on-site.*** To re-evaluate groundwater conditions underling the site and further assess the nature and magnitude of groundwater contamination.

Surface Water

- ***Sub-terranean drainage system and waste oil network.*** Two surface water samples were collected from arrestor pits downgradient of the roundhouse.

5.3 Methodology

5.3.1 Soil investigation method

Soil investigation and sampling activities were undertaken in accordance with Cavvanba's fieldwork procedures. Sampling locations are presented on Figure 3a and 3b.

All boreholes were advanced to a maximum depth of 1 m using a hand auger. A mechanical track mounted drilling rig (Christie Rig 27) fitted with a solid flight auger was then used advance groundwater monitoring well locations (MW101 to MW103) to a maximum depth of 8.0 m.

Test pits were advanced using hand tools to a maximum depth of 0.6 m. Test pits were initially excavated using a shovel, to a depth of approximately 0.3 m followed by a 150 mm diameter hand auger to the required depth. The dimensions of each test pit were approximately 0.3 m by 0.5 m in area such that a larger area of the subsurface could be exposed to enable an appropriate visual appraisal of surface and shallow soils. In areas where grass cover was present, the grass was initially removed and inspected prior to further excavation.

The investigation included a visual appraisal of surface and subsoils followed by a quantitative asbestos assessment of fill material. A 10 Litre (L) sample volume was collected at all test pit and borehole locations, which were sieved using a 20 mm and 7 mm sieve, and then visually inspected by spreading the contents of the sample on a plastic liner. All debris was carefully inspected for the potential to be ACM. Any potential ACM was logged and representative samples were collected for laboratory analysis. The immediate surrounding area and full extent of the soil profile was visually inspected for the presence of potential ACM, including building and construction materials or other debris which could indicate the potential presence of ACM within the area.

Soil properties were logged by an appropriately trained and experienced environmental scientist in general accordance with *Australian Standard AS 1726-1993*. Representative soil samples were collected for laboratory analysis at selected locations, based on visual and/or olfactory evidence of the following:

- multiple layers of fill material;
- changes in the soil profile; and
- potential contamination.

Representative soil samples were collected, to the extent practicable, in accordance with techniques described in *Australian Standard AS4482-2005* (Parts 1 and 2) to maintain the representativeness and integrity of the samples.

Field screening was conducted in accordance with Cavvanba's fieldwork procedures using a calibrated photo-ionisation detector (PID) fitted with a 10.6 eV lamp. Calibration certificates are included as Appendix C. Where practicable, soil samples were collected at the surface, 0.3 m and at 0.5 m intervals or where significant geological changes, or evidence of potential impact was observed, until termination. Soil samples were placed in a "zip-lock" bag, sealed and the resultant headspace was screened for the presence of ionisable volatile compounds. Where the presence of volatiles or other impact was suspected, additional samples were collected.

Soil sampling techniques which minimised the potential for loss of volatiles were utilised. Where the collection of undisturbed samples was not possible, the potential for loss of volatiles was minimised by sampling from larger clods of soil and minimising the duration between sample extraction and placement into the sample container. Representative soil samples were placed directly into the sample containers. Sample jars were sealed and immediately placed in an insulated cooler, on ice, and stored to minimise the potential loss or degradation of volatile compounds. Samples were shipped under chain of custody documentation to the NATA accredited analytical laboratory.

Test pit and borehole reinstatement

Upon completion, all test pits and boreholes were backfilled in reverse order, to the extent practicable, to prevent excessive vertical mixing of potentially contaminated subsurface material. Additionally, the grass surface covering was returned to each location.

Decontamination procedure

All down-hole drilling and sampling equipment were decontaminated by initially removing any residual soil with a stiff brush, followed by washing the equipment with Neutracon © / potable water solution.

5.3.2 Groundwater and surface water investigation method

Monitoring well installation

Three soil bores were converted to groundwater monitoring wells in accordance with Cavvanba's fieldwork procedures. The newly installed groundwater monitoring well locations are presented on Figure 3b.

The following methodology was implemented to install groundwater monitoring wells, with well construction detailed presented within the borehole logs, included as Appendix D:

- Monitoring wells were constructed of heavy duty 50mm diameter class 18uPVC with factory slotted screen (0.4mm slots) and well casing. Where practicable, the wells were screened within groundwater bearing strata in accordance with Cavvanba's fieldwork procedures and constructed to allow the potential ingress of non-aqueous phase liquids (NAPLs), if present.

- The well casing and screen were inserted into the borehole. Washed and graded filter sand was poured into the annulus between the well screen and borehole wall, to a level such that sand covered the screened level and extended above the top of the screen.

- Bentonite was then poured on top of the sand and hydrated to effectively seal off the well from surface water or perched / shallow groundwater inflows, and finished with a flush mounted gatic cover or monument.

Monitoring well development

Following monitoring well installation, each monitoring well was developed to remove any fine materials potentially introduced during drilling, and to optimise hydraulic conductivity with the surrounding aquifer. Wells were considered developed when either a minimum of 10 well volumes had been removed or when water quality parameters had stabilised. The removal of water was undertaken using a new disposable bailer dedicated to each location, as noted on the borehole logs.

Monitoring well construction details are presented within the borehole logs in Appendix D.

Groundwater and surface water sampling protocol

Groundwater purging and sampling was conducted on 26 and 27 April 2023, by Mr Zac Laughlan of Cavvanba. Prior to purging, wells were gauged with an interface probe to assess the depth of groundwater across the site, and presence / absence of NAPL. Groundwater samples were collected directly from single use High Density Polyethylene (HDPE) bladders and tubing using low flow sampling techniques in accordance with *Cavvanba Fieldwork Procedures for Groundwater sampling*.

Field parameters, including pH, redox potential (Eh), dissolved oxygen (DO), electrical conductivity (EC) and temperature were measured using a water quality meter (HAN 98194-4M), which was calibrated prior to use.

The surface water sample was collected as a grab sample directly from the stormwater arrestor pits on-site.

During sample collection and equipment decontamination, disposable nitrile gloves were used to prevent dermal contact with water. Samples were collected directly from dedicated tubing and placed into appropriately preserved, laboratory prepared sample containers. Groundwater samples collected for metals were filtered in the field using a 45-micron minisart filter. All surface water samples collected for metals were unfiltered (i.e. total metals). The containers were filled to minimise headspace, before being sealed and appropriately labelled. Labels included the following information:

- sample identification number;
- sampler;
- job number; and
- date of collection.

Samples were sealed and immediately placed on ice in a cooler to minimise potential for degradation of the sample. Samples were shipped under chain of custody documentation to the NATA accredited analytical laboratory.

Groundwater and surface water field forms, including calibration records are included as Appendix C. Groundwater monitoring well installation details are included within the borehole logs, included as Appendix D.

Per- and poly-fluoroalkyl substances (PFAS)

No Teflon containing, or Teflon coated sample equipment or clothing was used / worn during sampling. Prior to sampling, hands were washed with soap and rinsed thoroughly in tap water before donning a clean, new pair of disposable nitrile gloves for each sample collected.

Survey

The location and relative level (AHD) of each newly installed groundwater monitoring well was surveyed by a registered surveyor from Road and Civil Surveys (RCS) on 27 April 2023. The elevation of the highest point of the top of the uPVC well casing was surveyed to facilitate appropriate groundwater elevation calculations and groundwater flow direction interpretations. Groundwater monitoring well elevations and location details are presented in Tables 8 and 9. Survey data has been provided within Appendix C.

5.4 Assessment criteria

The adopted Tier 1 assessment criteria have been sourced from guidelines made or approved under the *Contaminated Land Management Act (1997),* and were based on a review of the following reference documents:

- ASC NEPM (2013) – *Schedule B1: Investigation Levels For Soil and Groundwater* (2013).
- CRC Care Technical Report no. 10 – Health screening level for petroleum hydrocarbon in soil and groundwater – Part 2: Application Document (CRC Care, 2011).
- National Health and Medical Research Council (NHMRC) (2011) *Australian Drinking Water Guidelines* (Updated March 2021) *(*NHMRC (2011) ADWG).
- PFAS National Environmental Management Plan Version 2.0 – January 2020 (PFAS NEMP) (Heads of EPAs Australia and New Zealand (HEPA), 2020).

In September 2011, CRC CARE published published technical report No. 10, *Health Screening Levels for petroleum hydrocarbons in soil and groundwater*. This document provides HSLs for human exposure to volatile organic compounds based upon the site-specific soil compositions of the potential vapour pathway in conjunction with classifications of receptor land-uses to more accurately assess risk to potential receptors. These HSLs have been applied to the data collected during these investigations with the following considerations:

- The general land use in the immediate vicinity of the area where contamination has been identified is commercial/industrial (on-site).
- The natural lithology encountered throughout the investigation was primarily clay. However, for conservative purposes and given the presence of fill material, a sand geology has been adopted.
- Depth to groundwater within monitoring wells sampled across the site during the current and previous rounds of monitoring has ranged between be 3.5 m and 8.3 m.

5.4.1 Soil

In accordance with the ASC NEPM (2013), health investigation levels are scientifically based, generic assessment criteria designed to be used in the first stage of an assessment of potential risks to human health from chronic exposure to contaminants. They are intentionally conservative and are based on a reasonable worst-case scenario. For soil, the appropriate and adopted criteria are based on the ASC NEPM (2013), in particular the health investigation levels (HILs), environmental investigation levels (EILs), environmental screening levels (ESLs) and health screening levels (HSLs) applicable for commercial/industrial land use scenarios.

These land use scenarios make generic estimates of potential human exposure to soil contaminants, scientifically based assumptions are made about the environment, human behaviour, the physicochemical characteristics of contaminants, and the fate and transport of contaminants in soil, within each of the land use categories. The HILs are derived by integrating these exposure estimates with toxicity reference values, that is, tolerable daily intakes, acceptable daily intakes and reference doses, to estimate the soil concentration of a substance that will prevent exceedance of the toxicity reference value under the defined scenario. The toxicity reference values are generally based on the known most sensitive significant toxicological effect. It is acknowledged that the dominant users of commercial/industrial sites are adult employees, who are largely involved in office-based activities or light indoor industrial activities, and the outdoor areas are largely covered by hardstand with some limited areas of landscaping or lawns and facilities. Opportunities for direct access to soil by employees using these facilities are likely to be minimal, but there may be potential for employees to inhale, ingest or come into dermal contact with dust particulates derived from soil on-site.

Health screening levels

HSLs for commercial/industrial space (HSL-D) and intrusive maintenance workers were adopted. This screening criterion is designed to assess the potential risk to human health via inhalation of petroleum compounds. Direct contact criteria for petroleum hydrocarbons available through CRC CARE (2011) was applied to the upper two metres of the soil profile where a pathway may be present.

Ecological screening and investigation levels

The ASC NEPM (2013) ecological investigation levels (EILs) and ecological screening levels (ESLs) for commercial/industrial sites are appropriate for the assessment of risks to ecological receptors. The EILs are numerical limits that are designed to protect soil and terrestrial flora and fauna (including pets and wildlife) and soil microbial processes from experiencing substantial deleterious effects caused by contamination. The ASC NEPM (2013) provides EILs for aged and fresh contamination for metal constituents including nickel, chromium, copper, zinc and lead. For the purposes of EIL derivation, a constituent incorporated in soil for at least two years was considered to be aged. Given the site has been operational since approximately the early 1900's, any identified impacts are likely to be primarily related to aged contamination. Therefore, EILs for aged contamination have been adopted.

Commercial and industrial land, particularly in long-established industrial areas, is often heavily contaminated by past activities or fill material used to level the area. In these cases, jurisdictions may determine that HILs are the most appropriate soil quality criteria and that EILs are not applicable. In many cases, the only generic ecological value for this land use will be 'transitory wildlife' (ASC NEPM, 2013). Based on this, the site-specific parameters (i.e. soil pH and cation exchange capacity) from the previous DSI (Cavvanba, 2021a) were not taken into consideration when deriving site specific criteria for assessment of fill material during this investigation. A more conservative approach was undertaken through the use of the generic EILs for commercial/industrial sites utilising reference values for typical Australian soils, based on ASC NEPM (2013). This includes the following soil characteristics:

- pH of 6;
- clay content of 10%;
- cation exchange capacity of 10 cmol/kg; and
- organic carbon content of 1%.

The ambient background concentrations (ABCs) have not been calculated for the site, and have been assumed to be zero. This approach has been deemed appropriate to assess the potential risk to ecological receptors during remediation and ongoing management of the site.

Aesthetic considerations for petroleum hydrocarbons – management limits

Petroleum hydrocarbon data collected during this investigation was also screened against petroleum hydrocarbon management limits (management limits) according to ASC NEPM (2013). The management limits are designed to protect against fire and/or explosion hazards, effects of hydrocarbons on buried infrastructure and the formation of NAPL. These criteria are not used for risk assessment purposes, however, are taken into consideration when determining if issues exist on site which may require management. Management limits have been included to avoid or minimise these potential effects.

Asbestos

An appropriate assessment of asbestos is undertaken in stages, with the first stage being an assessment of the type and condition of the asbestos or ACM. Once this has been established, a health screening level can be applied to the relevant type of asbestos, which is further discussed below.

The ASC NEPM (2013) summarises typical asbestos contamination into three groups, being:

- **ACM** is asbestos containing materials, bonded in a matrix such as cladding, fencing or vinyl tiles, that will not pass through as 7 mm x 7 mm sieve. ACM can usually be detected visually.

- **FA** is fibrous asbestos, including friable or severely weathered ACM. FA can usually be detected visually.

- **AF** is asbestos fines, including free fibres, small FA bundles, and ACMs that can pass through a 7 mm x 7mm sieve.

The assessment of non-friable ACM is the recommended method to address total asbestos contamination where friable asbestos (FA) and asbestos fines (AF) derived from non-friable ACM are not likely to be significant. Non-friable ACM in good condition usually presents a low risk to human health. If the main form of asbestos is ACM, an assessment for free fibres is not warranted where:

- < 10% of the total ACM is significantly damaged (ACM pieces less than 7 mm x 7 mm are noted); or
- ACM cannot be crushed/crumbled with hand pressure.

The ASC NEPM (NEPC, 2013) states that for non-friable asbestos cement fragments in reasonably good condition, it can be assumed that the distribution of any co-located asbestos fines associated with ACM is likely to be less than 10% of the total material present. In these cases, it can then be assumed that asbestos fines impacts are trivial and unlikely to exceed 0.001 % w/w asbestos across the soil profile, and therefore not present an unacceptable risk of airborne asbestos fibres, and not require sampling for asbestos fines.

Health screening levels for non-friable ACM are provided in ASC NEPM (NEPC, 2013), which have been summarised in Table 5.1, below.

Table 5.1: Health screening levels for asbestos contamination in soil

	Health Screening Level (weight/weight)			
Form of asbestos	Residential A	Residential B	Recreational C	Commercial/ Industrial D
Bonded ACM	0.01%	0.04%	0.02%	0.05%
FA and AF (friable asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil (top 10 cm should be free of all visible asbestos)			

For this site, the Commercial/Industrial D criteria of 0.05% is applicable given the current land use scenario. At these concentrations, non-friable ACM is unlikely to generate elevated levels of airborne fibres, however it is acknowledged that some non-friable fragments may remain intermixed within the soil.

5.4.2 Water

The assessment criteria adopted for groundwater have been classified according to the CRC CARE criteria and compared to the appropriate HSLs. The CRC CARE (2011) P*art 2: Application document* states that the selection of the appropriate soil category is significant for volatile chemicals, as it can affect the rate of vapour transport and hence the value of the HSLs for vapour inhalation. Determining which soil classification applies at a site may be established by grain size analysis, or by visual observation. In order to screen groundwater results against relevant criteria, Cavvanba adopted a visual observation approach to determine the appropriate soil category. In general, the dominant category of the soil overlying the source of contamination is clay. However, for conservative purposes and given the presence of fill material, the adopted HSLs were based on a sand geology, and an arbitrary depth to groundwater of between 2 to 4 m.

The NHMRC (2011) ADWG and *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (http://www.waterquality.gov.au/anz-guidelines as accessed 5 August 2021) (ANZG 2018) provides assessment criteria for the protection of drinking water and freshwater environments, respectively. This criterion has been adopted as Tier 1 criteria with their applicability further discussed in Section 8.0.

In accordance with ANZG (2018), a level of protection is defined as the degree of protection afforded to a water body based on its ecosystem condition (current or desired health status of an ecosystem relative to the degree of human disturbance. The level of protection informs the acceptable water / sediment quality for a waterway. There are three recognised categories of current or desired ecosystem condition in the water quality guidelines, the level of protection corresponds to the following ecosystem condition categories:

- high conservation or ecological value systems;
- slightly to moderately disturbed systems; and
- highly disturbed systems.

The general policy nationally is that the level of protection applied to most waterways is the protection of 95% of freshwater species. A lower level of 80% protection may apply to ‘highly disturbed’ systems, however, the 80% protection level may only be considered as a short-term measure (e.g. a maximum of five years in many cases), with the aim of eventually restoring it to the 95% status. It is not acceptable to allow poor environmental management to continue beyond the short term. A 95% species protection levels is to be applied for slightly to moderately-disturbed ecosystems (most urban catchments), and the 99% species protection levels for pristine or vulnerable ecosystems, or where the contaminants are intractable (e.g. bioaccumulative).

Water hardness

Increases in water hardness reduce the toxicity of some metals. The hardness corrections used in the ANZECC & ARMCANZ (2000) guidelines followed those used by the United States Environmental Protection Agency. All toxicity test endpoint values were adjusted to a standard hardness value of 30 mg $CaCO_3$/L, which was considered appropriate for the generally soft waters present in Australia and New Zealand. These corrections were largely based on acute toxicity data for fish but were being applied to modify guideline values based on chronic toxicity data. Hardness has a significant influence on the toxicity, with chromium (III) being more toxic in soft water. If the water being examined has a hardness greater than 30 mg $CaCO_3$/L, then it is appropriate to modify the default guideline value for that hardness.

Table 3.4.3 and Table 3.4.4 within the ANZECC & ARMCANZ (2000) guidelines provide hardness-dependent algorithms and approximate factors for modifying trigger values for select metals; cadmium, chromium (III), lead, nickel and zinc. Where applicable, these hardness-dependent algorithms have been applied to the adopted ecological screening criteria.

PFAS

For PFAS, the *PFAS National Environmental Management Plan Version 2.0 – January 2020* (PFAS NEMP) (Heads of EPAs Australia and New Zealand (HEPA), 2020) provides the necessary information on establishment of an action level for generic uses.

For groundwater and surface water, the drinking water quality (Australian Government Department of Health, 2019) and recreational water quality (NHMRC, 2019) guideline values have been adopted for assessment against human health. The freshwater 99% species protection – high conservation value systems have been adopted for assessment of ecological water quality (Canadian Federal Environment Quality Guidelines, 2018). The application of this criterion will be used in decision making and incorporated into the conceptual site model.

The available criteria consists of perfluorooctane sulfonate (PFOS), Perfluorooctanesulfonic acid (PFOA), perfluorohexane sulfonate (PFHxS), and sum of PFOS and PFHxS.

5.5 Laboratory analysis

Soil, groundwater and surface water samples were collected and analysed for a range of the following potential and known COCs, and chemical attributes:

- total recoverable hydrocarbons (TRH);
- benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN);
- polycyclic aromatic hydrocarbons (PAHs);
- heavy metals including arsenic (As), mercury (Hg), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni) and zinc (Zn);
- volatile organic compounds (VOCs);
- organochlorine and organophosphate pesticides (OCPs and OPPs);
- per-and polyfluoroalkyl substances (PFAS);
- chromium (III) and chromium (VI);
- hardness;
- natural attenuation parameters, including nitrate, sulfate, ferrous iron, methane and manganese; and
- asbestos (presence / absence).

5.6 Data usability

A background to data usability is provided in Appendix E. All site work was completed in accordance with Cavvanba's fieldwork procedures, including a QA/QC program.

A data usability assessment has been performed for the sampling undertaken during this investigation, as summarised in Appendix E and includes the following:
- summary of field quality assurance/quality control;
- field quality control soil samples summary; and
- summary of laboratory quality assurance/quality control.

Overall, the data usability assessment shows that the data is of suitable quality to support the conclusions made in this report.

6.0 Observations

6.1 Soil conditions encountered

Detailed descriptions of the site geology are presented in Table 1 and within the borehole and test pit logs, included as Appendix D. A photographic log is provided as Appendix F.

The key field observations made during the soil investigation in April 2023 are outlined below. Asbestos observations are relevant to the site condition prior to the interim asbestos management event described in Section 3.3 and Section 11.1:

- The generalised soil profile observed within the surface samples, boreholes and test pits advanced across the site consisted of a black sandy gravel / ash fill material of varying thicknesses to an approximate depth of 0.5 metres overlying natural silty / sandy clays as presented in Photograph 11.

- The soil profile observed during the advancement of groundwater monitoring wells MW101 to MW103 in the northern portion of the site, consisted of a light brown sandy gravel fill material to a maximum depth of 0.9 m (MW101), underlain by a natural silty / sandy clay to the maximum depth of investigation of 8.0 m as presented in Photograph 18.

- Anthropogenic material, including ash, glass, plastic, concrete, bricks, tiles, rubber and metal were observed in fill material in the majority of locations across the site.

- PID field screening provides a semi-quantitative indication of the potential presence of petroleum hydrocarbons in soil. PID field screening results were reported at a maximum concentration of 3.5 parts per million (ppm) (isobutylene equivalent) within fill material collected at surface sample location SS105. Petroleum hydrocarbon staining, consistent with oil and grease, was present within the four-foot of the railway lines in the southern and north-western portions of the site as presented on Photograph 13. These stains appeared superficial and did not appear to extend below the immediate ground surface. This is conservatively estimated to be less than 0.2 m depth.

- A slight petroleum hydrocarbon (diesel-like) odour was noted within surface fill material during the advancement of groundwater monitoring well MW103, corresponding to a PID field screening concentration of 1.2 ppm. Petroleum hydrocarbon odours or staining were not identified beyond a depth of 0.6 m at MW103 and during the advancement of the remaining groundwater monitoring wells.

- Potential ACM was identified to be widespread <u>on soils</u> within areas previously identified during the DSI and Additional ESA. However, was also observed to extend into the following areas as presented on Figures 5a and 5b:
  - isolated fragments within the four-foot of railway lines in the southern portion of the site;
  - high frequency of ACM within the location of the former maintenance pits and sub-terranean waste oil line, being Bays 1 to 15 which were observed to have been filled; and
  - isolated fragments within the area immediately surrounding and to the east of Building 8.

- Potential ACM was identified <u>in soils</u> as part of this Supplementary DSI at the following locations:
  - TP109, comprising a single fragment weighing 13.6 grams, located immediately to the southwest of the roundhouse from a depth of 0.0 – 0.1 m;

  - TP113, comprising multiple ACM fragments (< 10) intermixed within ash fill material, located within the filled area immediately to the east of the roundhouse from a depth of 0.4 m – 0.5 m; and
  - BH104, comprising layered ACM sheeting, located immediately adjacent to the north of the administration building from a depth of 0.4 m to the maximum depth of investigation.

- Friable asbestos was not identified.

6.2 Groundwater observations

All newly installed groundwater monitoring wells were developed following their installation on 21 April 2023. To enable sub-surface conditions to stabilise and groundwater levels to equilibrate, all newly installed monitoring wells were sampled more than 5 days following well installation and development on 26 and 27 April 2023. The newly installed wells were sampled along with the existing monitoring well network.

Groundwater gauging results and field quality parameters are presented in Table 9 and 10, respectively.

The key observations made during the groundwater investigation are outlined below, and where applicable, a comparison has been made to the most recent February 2022 groundwater monitoring event:

- Groundwater strike during installation of wells MW101 to MW103 was encountered at a similar depth of 6.5 m to 7.0 m within visibly saturated natural clays.

- Resultant standing water levels (SWLs) ranged from 4.190 m below ground level within MW102 in the north-eastern portion of the site, to 7.365 m within MW02, in the north-western portion of the site.

- Groundwater SWLs in pre-existing wells were reported to have lowered by an average 0.7 m since the 2022 monitoring event, as presented on the groundwater hydrograph included as Figure 6.1, below.

- MW08 located within the south-eastern portion of the site was dry during this round of monitoring.

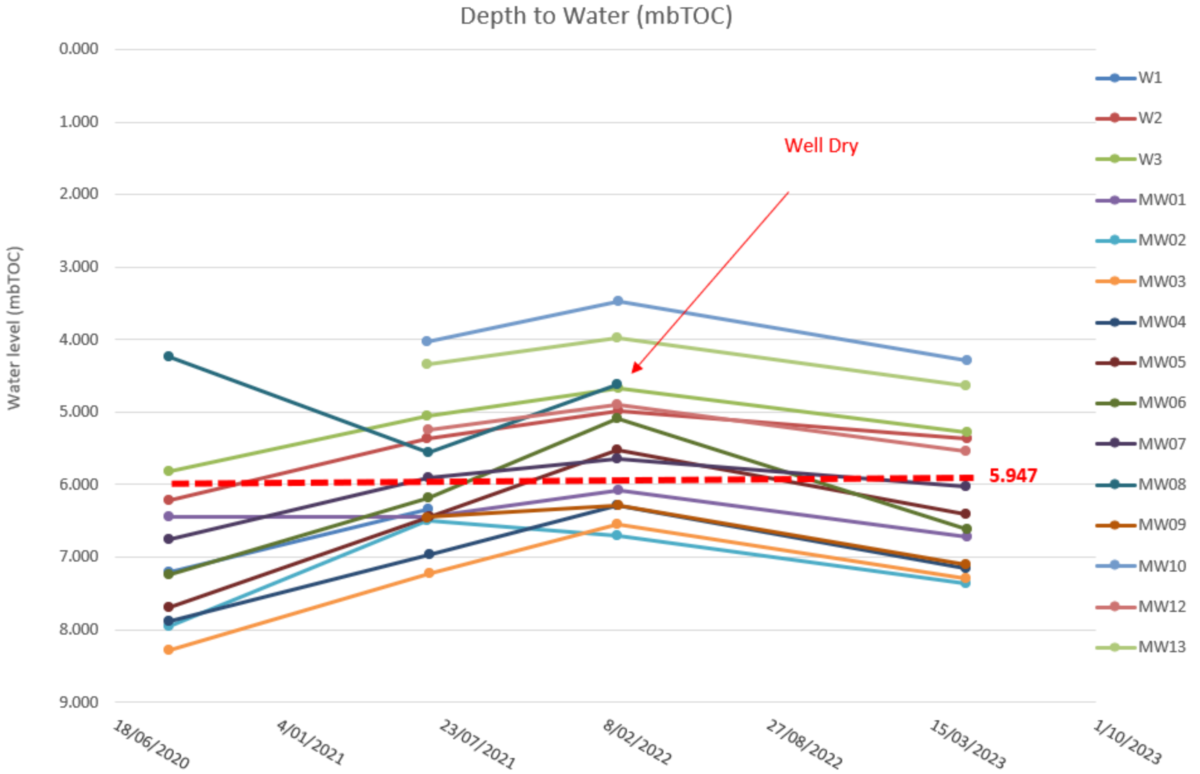
- LNAPL was observed within MW06 with a measured thickness of 0.53 m. The LNAPL was reported as dark black in colour with a strong hydrocarbon / oil odour. The thickness has increased by approximately 0.37 m from the February 2022 monitoring event.

- Purged water during sampling was observed to vary from being clear to slightly cloudy. A slight hydrocarbon odour and sheen was detected during sampling at MW02.

- Groundwater electrical conductivity ranged from 668 µScm-¹ at MW06 to 2,032 µScm-¹ at MW102. The corresponding salinity was calculated to range between 0.428 ‰ at MW06 and 1.300 ‰ at MW102 indicating a freshwater to estuarine ecosystem (<0.5 ‰ – freshwater; ≥0.5 to <25‰ – estuarine) (Warne et al., 2018). Groundwater EC generally increased across the site when compared to the February 2022 monitoring round.

- Groundwater pH ranged from 6.00 at MW12 to 8.86 at W2, indicating neutral to slightly alkaline conditions which is generally consistent with the previous round of monitoring.

Figure 6.1: Groundwater standing water level hydrograph



Note: Excludes monitoring well data from wells W1 to W3 from 1997 (J&K, 1997).

6.3 Surface water observations

Surface water sampling locations are presented on Figure 3a and 3b. Surface water field quality parameters are presented in Table 10 and within field forms, included as Appendix C.

The key observations made during the surface water investigation are outlined below:

- Two surface water samples were collected from the arrestor pits downgradient of the roundhouse.

- Surface water appeared stagnant and was not flowing at the time of sampling.

- Electrical conductivity was measured to be 279 µS cm^{-1} at SW01 and 393 μScm^{-1} at SW02. The corresponding salinity was calculated to be 0.179 ‰ and 0.252 ‰ indicating a freshwater environment (<0.5 ‰ – freshwater; ≥0.5 to <25‰ – estuarine) (Warne et al., 2018). This is consistent with that expected from stormwater.

- Surface water pH was measured at 7.29 at SW01 and 7.62 at SW02 indicating neutral conditions.

- Sediment accumulation was present in the base of the stormwater pit at sample location, SW02 as presented in Photograph 26.

- Surface water was generally observed to be clear to slightly cloudy. No hydrocarbon odours were observed at the time of sampling. A slight sheen was noted to be present at SW02 as presented on Photograph 26.

6.4 Stormwater and drainage observations

The stormwater and drainage investigation was completed by Aqua Assets under the guidance and direction of ARTC. Updated stormwater drainage plans (Figure B) and waste tracking documentation have been provided by ARTC and included within Appendix A. The following information was provided to Cavvanba by ARTC:

- The northern and southern arrestor pits were constructed of concrete and appeared to have been retrofitted to the existing stormwater system. Their construction appeared to be more modern than the remainder of the stormwater pits.

- All other identified stormwater pits were observed to be constructed of bricks and mortar. The integrity of most pits appeared to be in sound condition. One pit was observed to be damaged and is located immediately north of the northern arrestor pit.

- Stormwater from the site was observed to discharge off-site to the east via the belowground pipework at the following locations:
  - *Northern discharge point*: exits the site to the north of the former effluent treatment plant and former sewerage pumping station prior to intersecting Braidwood Road and discharge to the open stormwater drainage channel located on the eastern side of Braidwood Road as presented on Figure B; and
  - *Southern discharge point*: south of the administration building towards Braidwood Road as presented on Figure B.

Northern discharge point

- The northern discharge point receives stormwater runoff from the entire site, including the roundhouse. The roundhouse stormwater and subterranean waste oil network is interconnected and is further categorised as follows:
  - *Central drainage line*: Receives stormwater and locomotive maintenance wastes via the subterranean waste oil network from railway maintenance bays 34 to 42 which were operational at the time of the investigation;
  - *West drainage line*: Receives stormwater only from railway maintenance bays 22 to 33 which are currently unused and partially filled with concrete; and
  - *East drainage line*: Receives stormwater and locomotive maintenance wastes via the subterranean waste oil network from railway maintenance bays 16 to 21 which were operational at the time of the investigation.

- Railway maintenance bays 1 to 15 were observed to have been filled within unknown fill material, including ACM (as discussed in Section 6.1). The pipework from this area previously discharged east towards the eastern drainage line, however was observed to be blocked at the time of the investigation.

- Stormwater and locomotive maintenance wastes from railway maintenance bays 34 to 42 discharges east towards the northern arrestor pit (and eastern drainage line), being surface water sample location SW02.

- Stormwater and locomotive maintenance wastes from railway maintenance bays 16 to 21 discharges east towards the southern arrestor pit, being surface water sample location SW01. Discharge from the southern arrestor pit was understood to be to the north, towards the northern arrestor pit as the pipework from this pit to the east (via the southern discharge point) was observed to be blocked at the time of the investigation.

- Stormwater via the west drainage line discharges from the roundhouse to the west into the railway corridor. It is understood that this reconnects at the northern discharge point, however this could not be confirmed.

- All stormwater and wastes from the operational railway maintenance bays discharge from the site via either the southern or northern arrestor pits, and the API separator in the northern portion of the site.

- ARTC observed evidence of oil within the base of six stormwater drainage pits within the eastern drainage line at the time of the investigation. These pits have been presented on Figure B.

- Approximately 2,000 litres of oily sludge was removed from the southern arrestor pit on 8 August 2023. However, despite the oily sludge present, there was no odour / sheen observed during sampling by Cavvanba (SW01). ARTC noted that the oily sludge was solidified, and required a combination of vacuum truck and approximately 2,000 L of high pressure water to assist with dislodging the material.

- There was no evidence of oily sludge accumulation within the northern arrestor pit. However, there was a slight sheen observed on the surface of the water during sampling by Cavvanba (SW02).

- Approximately 5,000 litres of oily sludge was removed from the API separator on 21 June 2023. The API separator contained the oily sludge in the entry (initial) compartment. There was no evidence of hydrocarbon product within the second compartment, nor within the subsequent stormwater drainage pit downgradient of the API separator. An additional oil skimmer system (decommissioned) was observed within the decommissioned effluent treatment plant that now acts as a stormwater drainage pit. There was no evidence of hydrocarbon products within this system.

- Despite the presence of oily sludge within the abovementioned API separator and arrestor pit, there was no evidence of petroleum hydrocarbon odours or sheens noted by ARTC on water present within the holding tanks (4 x over / under separators) located on the eastern side of Braidwood Road prior to discharge to the open stormwater drainage channel.

Southern discharge point

- The southern discharge point receives stormwater and locomotive maintenance wastes via the subterranean waste oil network from railway maintenance bays 16 to 21 which were operational at the time of the investigation. Stormwater and wastes from this area discharge to the southern arrestor pit.

- The pipework from the southern arrestor pit to the east was observed to be completely blocked with silt at the time of the investigation. The attempt to unblock this passage resulted in the discharge of high-pressure water to the ground surface, meaning there is the potential that there are integrity issues associated with the pipework in this area.

- Based on this, there was no evidence of off-site stormwater migration from this point and it is understood that stormwater and wastes discharge from the southern arrestor pit, north via the northern arrestor pit. There is the potential that stormwater migration from this location was otherwise discharging to soils.

7.0 Analytical results

7.1 Soil

Soil analytical results were compared to the relevant screening criteria as described in Section 5.4. The analytical results for this supplementary DSI have been summarised by contaminant in Table 7.1, below, and in their entirety in Tables 2 to 5. Laboratory certificates are presented in Appendix H.

Table 7.1: Soil analytical summary

Analyte	Health criteria	Ecological criteria	Analytical data			
	HIL / HSL (mg/kg)	EILs/ESLs (mg/kg)	No. samples analysed	Max' (mg/kg)	Meets screening criteria?	No. above human health criteria
Metals						
Arsenic	3,000	160	85	282	No	0
Cadmium	900	-		20	Yes	0
Chromium	3,600	680		284	Yes	0
Copper	240,000	310		2,280	No	0
Lead	**1,500**	1,800		**2,260**	**No**	2
Nickel	6,000	290		77	Yes	0
Zinc	400,000	750		2,520	No	0
Mercury	730/180	-		0.2	Yes	0
TRH and BTEXN						
Benzene	3^1	75	85	<0.2	Yes	0
Toluene	99,000	135		<0.5	Yes	0
Ethylbenzene	27,000	165		<0.5	Yes	0
Xylenes	81,000	180		<0.5	Yes	0
Naphthalene	29,000	370		<0.5	Yes	0
F1 TRH C_6-C_{10}	260^1	215		<10	Yes	0
F2 TRH >C_{10}-C_{16}	$1,000^3$	170		250	No	0
F3 TRH >C_{16} – C_{34}	*$3,500^3$*	1,700		*5,540*	*No*	0
F4 TRH >C_{34} – C_{40}	$10,000^3$	3,300		1,820	Yes	0
PAHs and Phenols						
B(a)P TEQ	40	-	85	1.3	Yes	0
B(a)P	-	1.4		1.0	Yes	0
Total (PAHs)	4,000	-		15.3	Yes	0
Asbestos						
Asbestos	**Detect**	Asbestos	5	-	**No**	-

Table notes:
- = not detected above the limit of reporting (LOR) / no applicable assessment criteria.
Refer to Tables 2 – 5 for a complete list of screening criteria.
1 – Health screening levels for commercial land use (sand soils), 0m to <1m. Exceedance is shown in **bold.**
2 – Health investigation levels for commercial landuse. Exceedance is shown in **bold**.
3 – Management Limits coarse soil – exceedance is shown in *italic*.
4– Ecological screening and investigation levels for commercial/industrial landuse. Exceedance is shown as underline.

Exceedances of the adopted soil assessment criteria were limited to the following:

- TRH F3 ($>C_{16}$-C_{34}) in excess of the adopted ecological screening levels in fill material at three locations (SS105, SS106 and SS125), with maximum concentration of 5,540 mg/kg;
- TRH F3 ($>C_{16}$-C_{34}) in excess of the adopted management limits in surface fill material at SS105 with a reported concentration of 5,540 mg/kg;
- lead in excess of the health investigation level and ecological investigation level in fill material at two locations (SS110 and BH108_0.3-0.4), with maximum concentration of 2,260 mg/kg;
- arsenic in excess of the adopted ecological investigation level in fill material at two locations (SS112 and TP104_0.0-0.1), with a maximum concentration of 282 mg/kg;
- copper in excess of the adopted ecological investigation level in fill material at twenty locations, with a maximum concentration of 2,280 mg/kg;
- zinc in excess of the adopted ecological investigation level in fill material at eleven locations, with a maximum concentration of 2,520 mg/kg; and
- the widespread presence of ACM on the surface of the site as presented on Figures 5a and 5b.

7.2 Groundwater

Groundwater analytical results were screened against the relevant criteria as described in Section 5.4. The analytical results have been summarised by contaminant in Table 7.2, below, and in their entirety in Tables 11 to 15. Laboratory certificates are presented in Appendix H. Historical groundwater analytical data has been included as Appendix G.

Table 7.2: Groundwater analytical summary

Analyte	Health criteria	Ecological criteria	Analytical data			
	ADWG / HSL D (µg/L)	ANZG (µg/L)	Samples analysed	Max' (µg/L)	Meets criteria?	No. above human health criteria
Metals						
Arsenic	10	13	15	7	Yes	0
Cadmium	2	0.2 / 0.97^3		<0.1	Yes	0
Chromium	50	1		26	No	0
Trivalent Chromium		3.3 / 14.1^3		<10	Yes	0
Hexavalent Chromium		1		30	No	0
Copper	2,000	1.4		4	No	0
Lead	10	3.4 / 32.2^3		<1	Yes	0
Nickel	20	11 / 49.5^3		2	Yes	0
Zinc	-	8 / 36.0^3		11	No	0
Mercury	1	0.06		<0.1	Yes	0
TRH and BTEXN						
Benzene	1 / 5,000	950	15	<1	Yes	0
Toluene	800 / NL	180		<2	Yes	0
Ethylbenzene	300 / NL	80		<2	Yes	0
Xylenes	600 / NL	75		<2	Yes	0
Naphthalene	-	16		<2	Yes	-
F1 TRH C_6-C_{10}	6,000	-		<20	Yes	0

Analyte	Health criteria	Ecological criteria	Analytical data			
	ADWG / HSL D (µg/L)	ANZG (µg/L)	Samples analysed	Max' (µg/L)	Meets criteria?	No. above human health criteria
F2 TRH $>C_{10}$-C_{16}	NL	-		740	Yes	-
F3 TRH $>C_{16}$ – C_{34}	NL	-		1,560	Yes	-
F4 TRH $>C_{34}$ – C_{40}	NL	-		2,300	Yes	-
PAHs						
B(a)P	0.01	0.1	15	<0.5	Yes	0
Phenanthrene	-	0.6		<1	Yes	-
Total (PAHs)	-	-		<0.5	Yes	-
VOCs						
Cis-1,2-dichloroethene	60	-	15	<5	Yes	0
1,2-dichloroethane	-	1,900		<5	Yes	-
Vinyl chloride	0.3	-		**<50**	Yes	0
Chlorobenzene	300	55		<50	Yes	0
Chloroform	-	370		<5	Yes	-
PFAS						
PFOS	**0.07** / *2*	0.00023	15	*2.16*	*No*	2
PFHxS	**0.07** / *2*	-		**0.89**	**No**	2
Sum of PFOS & PFHxS	**0.07** / *2*	-		***3.05***	***No***	3
PFOA	0.56 / 10	19		0.04	Yes	0

Table notes:
- = no applicable assessment criteria.
Refer to Tables 11 – 15 for a complete list of screening criteria.
1. Drinking water criteria: Australian Government Department of Health, 2019.
2. Ecological criteria: ANZG – 95% protection of species – freshwater (µg/L)
3. Modified DGV based on an average water hardness of 176 mg $CaCO_3$/L calculated from all sampled wells
Bold/*italic*/underline = criterion exceedance.

It is acknowledged that the LOR for vinyl chloride (VC) is greater than two orders of magnitude than the criterion (i.e. 50 ug/L vs 0.3 ug/L). It is highlighted that other VOCs have not been detected, including those known to be precursors to VC such as Trichloroethene at an LOR of 5 ug/L, and therefore it has been treated as a non-detect.

All groundwater samples collected on-site were reported below the adopted CRC CARE HSLs for vapour intrusion.

Exceedances of the adopted groundwater assessment criteria (with consideration given to the water hardness adjustment) were limited to the following:

- total chromium in excess of the adopted 95% species protection levels at nine locations, with maximum concentration of 26 µg/L (W2);
- hexavalent chromium in excess of the 95% species protection levels at three locations, with a maximum reported concentration of 30 µg/L (W2);
- copper in excess of the 95% species protection levels at three locations, with a maximum concentration of 4 µg/L (W3);
- PFOS in excess of the adopted human health criteria at two locations, with a maximum concentration of 3.05 µg/L (MW05);

- PFHxS in excess of the adopted human health criteria at two locations, with a maximum concentration of 0.89 µg/L (MW05);
- sum of PFOS & PFHxS in excess of the adopted human health criteria at three locations, with a maximum concentration of 2.16 µg/L (MW05); and
- PFOS in excess of the 99% species protection levels at three locations, with maximum concentration of 2.16 µg/L (MW05).

7.3 Surface water

Surface water analytical results were screened against the relevant criteria as described in Section 5.4. The analytical results have been summarised by contaminant in Table 7.2, below, and in their entirety in Tables 11 to 15. Laboratory certificates are presented in Appendix H.

Table 7.3: Surface water analytical summary

Analyte	Health criteria	Ecological criteria	Analytical data			
	ADWG (µg/L)	ANZG (µg/L)	Samples analysed	Max' (µg/L)	Meets criteria?	No. above human health criteria
Metals						
Arsenic	10	13	2	<1	Yes	0
Cadmium	2	0.2		1	No	0
Chromium	50	1		3	No	0
Copper	2,000	1.4		38	No	0
Lead	10	3.4		14	No	0
Nickel	20	11		2	Yes	0
Zinc	-	8		11	No	0
Mercury	1	0.06		<0.1	Yes	0
TRH and BTEXN						
Benzene	1	950	2	<1	Yes	0
Toluene	800	180		<2	Yes	0
Ethylbenzene	300	80		<2	Yes	0
Xylenes	600	75		<2	Yes	0
Naphthalene	-	16		<2	Yes	-
F1 TRH C_6-C_{10}	-	-		<20	Yes	0
F2 TRH >C_{10}-C_{16}	-	-		430	Yes	-
F3 TRH >C_{16} – C_{34}	-	-		1,900	Yes	-
F4 TRH >C_{34} – C_{40}	NL	-		640	Yes	-
PAHs						
B(a)P	0.01	0.1[1]	2	<0.5	Yes	0
Phenanthrene	-	0.6		<1	Yes	-
Total (PAHs)	-	-		<0.5	Yes	-
VOCs						
Cis-1,2-dichloroethene	60	-	2	<5	Yes	0
1,2-dichloroethane	-	1,900		<5	Yes	-

Analyte	Health criteria	Ecological criteria	Analytical data			
	ADWG (µg/L)	ANZG (µg/L)	Samples analysed	Max' (µg/L)	Meets criteria?	No. above human health criteria
Vinyl chloride	0.3	-		<50	Yes	0
Chlorobenzene	300	55		<50	Yes	0
Chloroform	-	370		<5	Yes	-
PFAS						
PFOS	0.07 / 2	0.00023	2	0.03	No	0
PFHxS	0.07 / 2	-		0.03	Yes	0
Sum of PFOS & PFHxS	0.07 / 2	-		0.05	Yes	0
PFOA	0.56 / 10	19		<0.01	Yes	0

Table notes:
- = no applicable assessment criteria.
Refer to Tables 11 – 15 for a complete list of screening criteria.
1. Drinking water criteria: Australian Government Department of Health, 2019.
2. Ecological criteria: ANZG – 95% protection of species – freshwater (µg/L)
Bold/*italic*/underline = criterion exceedance.

Exceedances of the adopted assessment criteria were limited to the following:

- cadmium, chromium, copper, lead, nickel and zinc in excess of the 95% species protection levels at SW02;
- zinc in excess of the 95% species protection levels at SW01; and
- PFOS in excess of the 99% species protection levels at SW02.

TRH was reported at a maximum concentration of 1,900 µg/L (F3 $>C_{16}$ – C_{34}) at SW02 ($>C_{10}$ – C_{40} concentration of 2,970 µg/L), which correspond to field observations of a slight sheen at this location.

8.0 Discussion

8.1 Soil

This supplementary detailed site investigation involved an intrusive soil investigation and analytical sampling at 80 locations across the site to supplement previous investigation data, address data gaps identified by Cavvanba and reduce uncertainties in the assessment of remedial options and regulation of the site.

Exceedances of the human health commercial/industrial criteria were limited to lead and asbestos only. Ecological investigation / screening level exceedances were identified for TRH and metals within fill material at select locations. TRH F3 ($>C_{16}$-C_{34}) was also identified to exceed the adopted management limits in surface fill material at one location. The significance of these exceedances are discussed below, and where individual constituents are not discussed, there were no exceedances reported.

8.1.1 Lead

Lead was reported to exceed the adopted human health commercial/industrial criteria of 1,500 mg/kg at two locations with a maximum reported concentration of 2,260 mg/kg:

- Surface soil sample location SS110, located in the four-foot within the southern portion of the site with a reported concentration of 2,260 mg/kg.

- BH108 with a reported concentration of 1,910 mg/kg. BH108 is positioned immediately adjacent to the railway line to target borehole '5' where a lead concentration of 43,000 mg/kg was previously reported by J&K in 1997. Cavvanba understands that since then, this area was repaved by GLRPS with imported material including the central portion of the roundhouse, gravel access road and vehicle parking areas. The borelog at BH108 describes material at the surface to 0.2 m depth being a light brown sandy gravel and the lead concentration in this material was reported at 28 mg/kg. This supports the observation of repaving. However, the underlying dark brown sandy gravel is presumably the material previously tested by J&K in 1997, but lead concentrations were reportedly lower than previous, at 1,910 mg/kg. The lack of reproducibility is not unusual in investigations over 20 years apart, and it is possible that the previous detect by J&K are limited in extent, or the material has been moved during the repaving process. There is no documented remediation, therefore the area should remain an area requiring management.

- The extent of lead contaminated soils through data collected from this, and previous investigations can be summarised as widespread, but discontinuous within the southern and north-western portion of the site. The magnitude of which varies, due to a mosaic of historical activities and progressive infilling. Based on Cavvanba's understanding of historical railway-related operations on-site and within the Goulburn railway precinct, the presence of lead is likely associated with a combination of contamination sources, including the following:
  - historical burning of redundant timber railway carriages, which were known to contain lead-based paint and lead flashing;
  - the reuse of grit blasting media, and the associated process of grit blasting within uncontrolled areas of the site;
  - the deposition (through deterioration / mechanical disturbance) of lead-based paint to the ground surface; and
  - ash fill material which, in certain circumstances, is known to contain elevated lead concentrations, however there is no clear correlation between the presence of ash and elevated lead concentrations.

8.1.2 Asbestos in and on soil

A total of eight representative fragments of ACM were collected and analysed across the multiple locations where ACM was observed, both on the surface and within the subsurface fill material. Asbestos was detected by the laboratory in all fragments analysed. Therefore, it should be assumed that all similar material observed across the site is ACM. Friable ACM was not identified.

The ACM presence on soils was identified to be widespread within areas previously identified, however was also observed to extend into the following areas as presented on Figures 5a and 5b:

- isolated fragments within the four-foot of railway lines in the southern portion of the site;
- a high frequency of ACM beneath locomotives and rolling stock within the location of the former maintenance pits and sub-terranean waste oil line, being Bays 1 to 15; and
- isolated fragments within the area immediately surrounding and to the east of Building 8.

ACM was identified in soils at the following three locations:

- a single fragment at TP109, located immediately to the southwest of the roundhouse from a depth of 0.0 – 0.1 m;
- multiple fragments (<10) at TP113, located within the filled area immediately to the east of the roundhouse from a depth of 0.4 m – 0.5 m; and
- layered sheeting at BH104, located immediately adjacent to the north of the administration building from a depth of 0.4 m to the maximum depth of investigation.

The identification of high frequency ACM on surface soil beneath locomotives and rolling stock within Bays 1 to 15 of the Roundhouse is, in Cavvanba's opinion, an indication that the maintenance pits within the portion have been filled with uncontrolled fill material. The use of uncontrolled fill containing ACM is consistent with that observed in the southern portion of the site and therefore, it should be assumed that ACM is present throughout fill material in this area.

The distribution of ACM can be summarised as widespread in and on soil within the southern and north-western portion of the site, and can generally be attributed to areas where historical filling has occurred and/or where known ACM buildings and structures have been demolished. The sporadic and unexplained nature of ACM in soils in some areas of the site (i.e. at BH104 from a depth of 0.4 m) indicates a risk of ACM being present within areas where known filling has occurred, and should therefore be managed accordingly. This also applies to the central portion of the roundhouse, gravel access road and vehicle parking areas which have been repaved with imported material by GLPRS, and likely provide a barrier to potential ACM fragments which may be present within underlying fill materials within this area. Management is currently guided by the IEMP, and routine hand-picking events are taking place to reduce the hazard. Refer to Section 3.3 and 11.1 for management events and discussion.

8.1.3 Ecological

Arsenic, copper, zinc and TRH F3 ($>C_{16}$-C_{34}) were reported to exceed the adopted ecological investigation levels within fill material at multiple locations advanced across the site. Cavvanba notes that the higher concentration samples were collected from the four-foot of the railway lines in the southern portion of the site, which is linear railway corridor that is highly disturbed and is purposely phytotoxic to preserve the integrity of the railway line. These are a possible result of historical herbicide and pesticide application to the rail line and accumulation over time. There are also isolated EIL exceedances within other areas of the site, however these are most likely to be attributed to fill material rather than pesticide/herbicide application. The significance of these exceedances should therefore be considered in conjunction with health investigation level exceedances, and where isolated exceedances are reported, they are unlikely to represent an unacceptable risk to ecological receptors on-site.

Whilst EIL exceedances are unlikely to drive remediation actions on this site, there is a relationship to be considered between phytotoxicity of metals in soils and ACM in soils. This manifests where phytotoxic conditions could result in a reduction of grass cover in areas where management of ACM in soils relies on the presence of grass cover to minimise erosion and dust generation. This relationship is not obvious at this stage, however it is plausible that other future stresses such as drought will strongly exacerbate metal phytotoxicity, and should therefore be considered in the IEMP.

8.1.4 Management limits / aesthetic issues

TRH F3 (>C_{16}-C_{34}) concentrations in soil were reported to exceed the adopted management limits at one surface sample location SS105 (5,540 mg/kg), within the four-foot railway tracks in the south-eastern corner of the site. The reported exceedance was attributed to oil and grease staining, which was evident at this location, and was observed to be present at isolated locations throughout the four-foot within the southern portion of the site. The staining identified throughout this area is common within railway siding areas where localised oil, fuel and/or grease deposits are present as a result of locomotives standing for long periods of time. Field observations at the time of sampling indicate that the staining is limited to surface soils only, being less than 0.2 m, however no analytical testing was undertaken to validate this observation.

Whilst the localised presence and magnitude of the reported concentrations are not considered to indicate the presence of LNAPL (CCME, 2008) or a potential risk of hazardous atmospheres, they do represent aesthetic issues that require appropriate management.

8.2 Groundwater

This supplementary detailed site investigation included the advancement of three boreholes and subsequent conversion to groundwater monitoring wells within accessible locations in the northern portion of the site, targeting the decommissioned diesel aboveground storage tanks and effluent treatment plant. The newly installed monitoring wells are considered to be adequate to intercept contamination as a result of these former contamination sources, if present.

The following discussion combines the information from these new monitoring wells with a complete groundwater monitoring event of the existing well network.

8.2.1 Groundwater flow direction

The measured standing water levels and calculated groundwater elevations indicate groundwater flow is consistent with that previously reported, predominantly flowing in a north-easterly direction, and aligning with the topographic slope of the site. However, there is localised variation in flows due to groundwater mounding which is likely associated with variable subsurface permeabilities from historical filling and on-site infrastructure. This is particularly relevant surrounding monitoring well MW12. Hydrogeological information has been presented on Figure 4.

It is acknowledged that a single arrow is not sufficient to illustrate groundwater flow on large sites and/or hydrogeologically complex sites. Piezometric contours measured at the site are presented on Figure 4, and are based on a contour interval of 0.1 m. On larger sites and in complex hydrogeological situations, contouring can be conducted using numerical models (i.e. using computerised kriging) where artificial detail can be introduced, particularly in under-sampled areas and at the edge of data coverage which can detract from actual conditions. However, the single arrow and inferred flow direction to the northeast is appropriate based on the data points available at the time, and additional data is unlikely to materially affect this interpretation.

8.2.2 Petroleum hydrocarbon contamination

All groundwater samples collected on-site were reported below the adopted CRC CARE HSLs for vapour intrusion.

Based on the presence and distribution of petroleum hydrocarbon detections in groundwater through data gathered from this and previous monitoring events, there are two known and independent contamination source areas, referred to as locomotive maintenance bays and former diesel refuelling gantry. These are further discussed below.

Locomotive maintenance bays

LNAPL was identified at a measured thickness of 0.53 m in monitoring well MW06, located adjacent to the Roundhouse building. This was an increase of 0.37 m from the previous monitoring event completed in February 2022. This monitoring well was installed in 2020, targeted towards the Roundhouse Building maintenance pits, engine shed and subterranean waste oil line and is within an area where active locomotive maintenance is occurring (railway bays 16 to 21).

The hydrocarbon fingerprinting analysis completed in February 2022 reported the LNAPL had a chromatographic profile typical of a mixture of severely biodegraded kerosene and diesel, or possibly degraded light fuel oil with a carbon range of C_{11} up to C_{22}. There were no other petroleum products detected in the sample and the degree of degradation had an estimated time in the environment of between 29 and 47 years.

LNAPL has not been identified in any of the remaining groundwater wells across the site since monitoring in August 2020, and the absence of detectable dissolved phase hydrocarbons within groundwater monitoring wells cross – and down-gradient from this location indicates that the impact is localised and unlikely to be mobile. The increase in LNAPL thickness that has manifested during this monitoring event is likely associated with residual LNAPL saturation rather than an ongoing source. This is evident by water table fluctuations which can result in a dynamic change in the extent of the unsaturated and saturated zones, causing LNAPL to continuously redistribute vertically. As consequence, the amount of mobile LNAPL changes with time, however the LNAPL volume remains unchanged. A 2.1 m increase in SWLs was recorded at this location during the 2022 event, and a further 1.5 m decrease during this round of monitoring.

Shallow groundwater (<2 m) is not present across the site and shallow perched groundwater has not been identified by Cavvanba throughout any of the intrusive investigations completed since August 2020. The results of the hydrocarbon fingerprinting analysis and absence of detectable volatile hydrocarbons such as BTEXN, short chain or chlorinated hydrocarbons indicates that a potential vapour intrusion health risk as a result of the LNAPL presence at MW06 is low. This risk is further reduced due to the absence of routinely occupied buildings within this area, and assumed air exchange capacity of the large and open roundhouse building.

Diesel refuelling gantry

Dissolved phase petroleum hydrocarbon contamination in groundwater was reported at a maximum concentration of 40,700 µg/L (F2 TRH $>C_{10} - C_{16}$) at monitoring well location MW02, located immediately adjacent to the former diesel refuelling gantry during the DSI in 2020. A sudden, two orders of magnitude reduction in TRH concentrations was reported at this location during the subsequent Additional ESA in 2021, which was considered to be associated a ruptured belowground water pipe and potential potable water influence at this location. This was further evidenced by the detections of chloroform and bromodichloromethane at this location which are present in drinking water as a result of the chlorination disinfection process.

TRH (F2 >C_{10} – C_{16}) concentrations within this monitoring well were reported at 740 µg/L during this groundwater monitoring event. Consistent with recent the most recent groundwater investigations completed in 2021 and 2022 at the site, petroleum hydrocarbon concentrations at this location remain low, and are localised, being delineated by down-gradient monitoring wells, however MW02 has shown a slight increase which may be an indication of a slow rebound.

Monitored natural attenuation data collected across the site, and the observed trends of selected monitoring wells up-gradient (MW04), within the source zone (MW02) and down-gradient (MW10) of the diesel refuelling gantry have shown that indicators are present to support natural attenuation. The significance of this is further discussed in Section 9.0.

8.2.3 Volatile organic compounds

TCE and DCE were detected in groundwater at monitoring well location MW12, at respective concentrations of 8 µg/L and 5 µg/L during the 2022 monitoring event. VOCs were not detected in groundwater within any of the monitoring wells sampled as part of this monitoring event.

The isolated detections and low concentrations identified in 2022 (i.e. < 10% criterion DCE) are unlikely to represent an unacceptable risk to human health or the environment on or off-site (delineation achieved and absence of a vapour intrusion pathway at this location), however their previous presence represents an ongoing data gap warranting inclusion in any ongoing monitoring or operational changes.

8.2.4 Per- and poly-fluoroalkyl substances

PFAS was included within the groundwater analytical suite for all groundwater monitoring wells sampled across the site. The nature and extent of PFAS impacts within groundwater is as follows:

- PFOS, PFHxS and the sum of the two were reported above the human health drinking water guideline value at monitoring well locations MW02, MW05 and MW103 on-site with a maximum reported concentration of 3.05 µg/L (Sum of at MW05).

- PFOS and Sum of PFHxS and PFOS were reported above the human health recreational water guideline value at monitoring well location MW05 only.

- Exceedances of the adopted 99% level of species protection criteria for PFOS were reported at monitoring well locations MW02, MW05 and MW12, with a maximum reported concentration of 2.15 µg/L (Sum of at MW05). However, Cavvanba acknowledges that the laboratory limit of reporting (LOR) is greater than the 99% level of species protection criteria, and therefore may be an indication that additional exceedances are apparent in groundwater at other monitoring well locations on-site.

- Exceedances of the 95% level of species protection criteria for PFOS (0.13 µg/L) was reported at one monitoring well location, MW05 only.

- The distribution of PFAS infers that the roundhouse is likely to be the source of contamination, however there is no clearly defined plume and the source is not well understood. It is plausible that the source of contamination is associated with a variety of activities undertaken at the site over many years, and its presence is an artifact of historical operations rather than a particular event (i.e. fire training / fire). This is also supported by the low concentration PFAS in surface water samples collected, which are likely to detect an ongoing surface source such as exposed soil or concrete.

- Delineation has been partly achieved onsite, with the most obvious data gap being MW103, where PFOS is likely to be greater than the 99% species protection level given PFHxS was detected at 0.11 ug/L (the second highest recorded concentration of PFHxS), and its close proximity to the site boundary. Further investigation is required to assess whether an unacceptable risk to human health and the environment is present, and it should consider the distance to the nearest receiving surface water (Mulwaree River ~570 m), availability of municipal potable water and the absence of registered groundwater extraction bores down-gradient of the site.

8.2.5 Heavy metals

Consistent with the previous groundwater monitoring events, a limited number of exceedances of the adopted 95% level of species protection criteria were detected in monitoring wells on-site. These reported concentrations are not considered to represent an unacceptable risk to the environment based on the following:

- the reported concentrations are within a similar order of magnitude and/or only marginally in excess of the adopted criteria;
- groundwater beneath the site is not considered to be an ecological receptor of concern in itself; and
- the Mulwaree River is located approximately 570 m from the site boundary, and it is likely that physical and geochemical processes such as dispersion and adsorption would inhibit migration of this distance.

Water hardness corrections

Water hardness concentrations were reported to be highly variable across the site, ranging from 26 mg $CaCO_3$/L at MW10 to 488 mg $CaCO_3$/L at MW01, indicating soft to extremely hard conditions. Given this, an average hardness concentration of 176 mg $CaCO_3$/L was calculated and applied to the dataset from the reported hardness concentrations across the site.

This value was utilised to modify the guideline for cadmium, chromium (III), nickel, zinc and lead which have been presented within Table 12. The following can be summarised from this process:

- cadmium, chromium (III) and lead concentrations were not detected above the laboratory detection limits and as such, the modification does not affect the outcome of the results;
- nickel did not exceed the guideline value or the modified guideline value; and
- zinc exceed the guideline value at one location, however did not exceed the modified guideline.

Chromium

Speciation for chromium was conducted at all groundwater monitoring well locations on-site and reported:

- no exceedances of the human health drinking water guideline value of 50 µg/L (CrVI); and
- three locations to exceed the 95% level of species protection criteria, with a maximum reported concentration of 30 µg/L.

The concentrations of CrVI were similar to the total chromium (i.e. CrIII + CrVI) concentration indicating that the detection of total chromium represents a likely CrVI concentration. Cavvanba therefore acknowledges that the resultant laboratory limit of reporting (LOR) for speciated CrVI of 10 µg/L is greater than the 95% level of species protection criterion of 1 µg/L. As a result, the lower concentration total chromium detects which are less than 10 µg/L but more than 1 µg/L may be considered exceedances of the CrVI criterion.

The exact source of chromium in groundwater at the site remains uncertain, it is likely a legacy issue associated with a variety of historical operations completed at the site. Whilst exceedances of the 95% level of species protection criteria for chromium (VI) were identified on the boundary and delineation remains incomplete off-site, it is not considered to represent an unacceptable risk to human health or the environment based on the following:

- groundwater beneath the site is not considered to be an ecological receptor of concern in itself;
- there are no registered groundwater extraction bores down gradient of the site; and
- the Mulwaree River is located approximately 570 m from the site boundary and it is likely that physical and geochemical processes such as dispersion and adsorption would inhibit migration of this distance. .

8.3 Stormwater and drainage

The stormwater and drainage investigation was completed by Aqua Assets under the guidance and direction of ARTC. The observations of which, were communicated with Cavvanba for inclusion within this report. Based on the observations made during this investigation, as outlined in Section 6.4, the following key data gaps have been identified:

- The integrity of the pipework and stormwater pits, particularly the pits constructed of bricks and mortar. Whilst the majority were observed to be in sound condition, there is the potential for soil and groundwater contamination as a result of their long history and use. With the exception of monitoring well MW06, gross petroleum contamination in groundwater has not been identified based on the monitoring well network available to date.

- The integrity of the pipework at the southern discharge point, and whether there are resultant soil and groundwater contamination issues associated with this.

- The chemical composition of stormwater at the discharge point (i.e. within the holding tanks) on the eastern side of Braidwood Road (for location refer to Figure B of Appendix A). This is particularly relevant given the identified freshwater guideline value exceedances discussed in Section 8.3.1, below.

8.3.1 Surface water

Exceedances of the protection of freshwater guideline value were reported for heavy metals and PFOS in surface water sampled from the northern and southern arrestor pits on-site. TRH concentrations were also reported above the laboratory limit of reporting at both locations, and a slight sheen reported within the northern arrestor pit. The significance of these are further discussed below.

Petroleum hydrocarbon contamination

TRH was reported at a maximum concentration of 1,900 µg/L (F3 $>C_{16} – C_{34}$) at SW02 and total $>C_{10} – C_{40}$ concentration of 2,970 µg/L. The corresponding field observations at this location reported a slight hydrocarbon sheen at this location as presented on Photograph 26.

The significance of this, and whether there is a potential unacceptable risk to ecological receptors off-site are to be further evaluated as part of future surface water monitoring.

Heavy metals

Select metals exceeded the 95% level of species protection criteria within the northern and southern arrestor pits on-site, as presented within Table 12. However, it is noted that all samples collected for metals analysis were analysed as total metals, i.e. unfiltered in the field. In accordance with ANZECC/ARMCANZ (2000), measuring the total (unfiltered) metal concentration in the first instance is the preferred approach as should the resultant concentration meet the guideline values, then no further investigation is required. A comparison of total concentrations will, at best, overestimate the fraction that is bioavailable as the major toxic effect of metals comes from the dissolved fraction.

Therefore, given the metals concentrations reported, field filtering should be considered as part of future surface water monitoring to enable a more appropriate assessment against the ANZECC/ARMCANZ (2000) freshwater guideline value.

Per- and poly-fluoroalkyl substances

Exceedances of the adopted 99% level of species protection criteria for PFOS was reported at surface water location SW02, being the northern arrestor pit on-site at a concentration of 0.03 µg/L. However, consistent with groundwater, Cavvanba acknowledges that the laboratory limit of reporting (LOR) is greater than the 99% level of species protection criteria.

Exceedances of the 95% level of species protection criteria for PFOS (0.13 µg/L) were not identified.

Consistent with petroleum hydrocarbons, the significance of these exceedances, and whether there is a potential unacceptable risk to ecological receptors off-site are to be further evaluated as part of future surface water monitoring.

9.0 Monitored natural attenuation

9.1 Introduction

Natural attenuation is the process of breaking down contamination through one or a combination of the following processes:
- biodegradation;
- dispersion;
- dilution;
- sorption;
- volatilisation;
- chemical or biological stabilisation;
- transformation; and
- destruction of contaminants.

Natural attenuation via biodegradation has been assessed at the site using the following lines of evidence as per the technical guidance *CRC CARE Technical Report 15* (Beck and Mann, 2010), ASTM (2010), and US EPA (1997).

Natural attenuation processes are evaluated through three key lines of evidence:

- Primary evidence – shrinkage of plume extent and attenuation of contaminant concentrations.

- Secondary evidence – trends in chemical indicator parameters which support the presence of active biological degradation processes.

- Tertiary evidence – demonstrated presence of bacterial fauna which are known to degrade the identified COPC.

9.2 Primary lines of evidence – concentration trends

9.2.1 LNAPL

There are two known and independent contamination sources areas based on the presence and distribution of petroleum hydrocarbon detections in groundwater. These are referred to as the locomotive maintenance bays and former diesel refuelling gantry. The presence of LNAPL in MW06 is likely as a result of the locomotive maintenance bays and its presence has remained consistent over the previous two rounds of groundwater monitoring. A maximum thickness of 0.53 m was recorded during this monitoring round, suggesting a potential increasing thickness trend.

A measurable thickness of LNAPL has not been recorded within MW02, being associated with the former diesel refuelling gantry. However, TRH (F2 TRH $>C_{10}$ – C_{16}) concentrations previously reported by Cavvanba as part of the DSI exceeded the solubility limits, and therefore was likely an indication of a potential source of LNAPL at this location. This was further evidenced by J&K in 1997, where a TRH concentration of 870,000 µg/L (TRH $>C_{10}$ – C_{14}) was reported for groundwater that had accumulated (and sampled) within a borehole during advancement in this area.

The presence of LNAPL or likely presence of LNAPL represents an ongoing source which will prolong any passive option such as MNA. The feasibility of LNAPL removal should therefore be considered as a remediation action to enhance MNA.

9.2.2 Dissolved phase

TRH concentration trends in groundwater monitoring well MW02, are presented on Figure 9.1, below. This well has been selected as it is located immediately adjacent to the former diesel refuelling gantry and has been the focus of elevated TRH dissolved concentrations in groundwater since the first monitoring event within this area of the site (Cavvanba, 2021a).

Concentrations of TRH > C_{10} – C_{40} in MW02 have significantly decreased from 72,600 ug/L in August 2020 to 2,300 ug/L in the most recent sampling round, completed in April 2023. It is noted that there has been a slight increase in concentrations at this location between 2021 and the most recent round of monitoring as previously discussed in Section 8.2.2.

The decrease in TRH concentrations at this location is likely associated with a combination of the following factors:

- the likely potable water influence as discussed in Section 8.2.2;
- natural attenuation processes occurring at the site; and
- the primary source of contamination has been removed (i.e. refuelling no longer occurs within this area of the site).

A detailed Mann-Kendell analysis was undertaken to quantitatively assess the groundwater concentration trend. The analysis was conducted on groundwater monitoring well MW02, which had at least four data points to calculate the statistical trend for TRH > C_{10}-C_{40} concentrations. The results are summarised in Table 9.1 and presented graphically on Figure 9.2, below.

Table 9.1: Mann-Kendell analysis

Monitoring well	Analyte	Concentrations stable or generally decreasing?	Mann-Kendall P Value	Statistically confirms decreasing trend?
MW02	TRH > C10-C40	Stable	1.000	No

Notes:

- A P-value less than the significance level (alpha = 0.05), means the null hypothesis is rejected, and there is a decreasing trend in the data (shown as Yes).
- A P-value greater than the significance level (alpha = 0.05) means the null hypothesis is not rejected, and there is not sufficient evidence to conclude that there is a trend (shown as No).

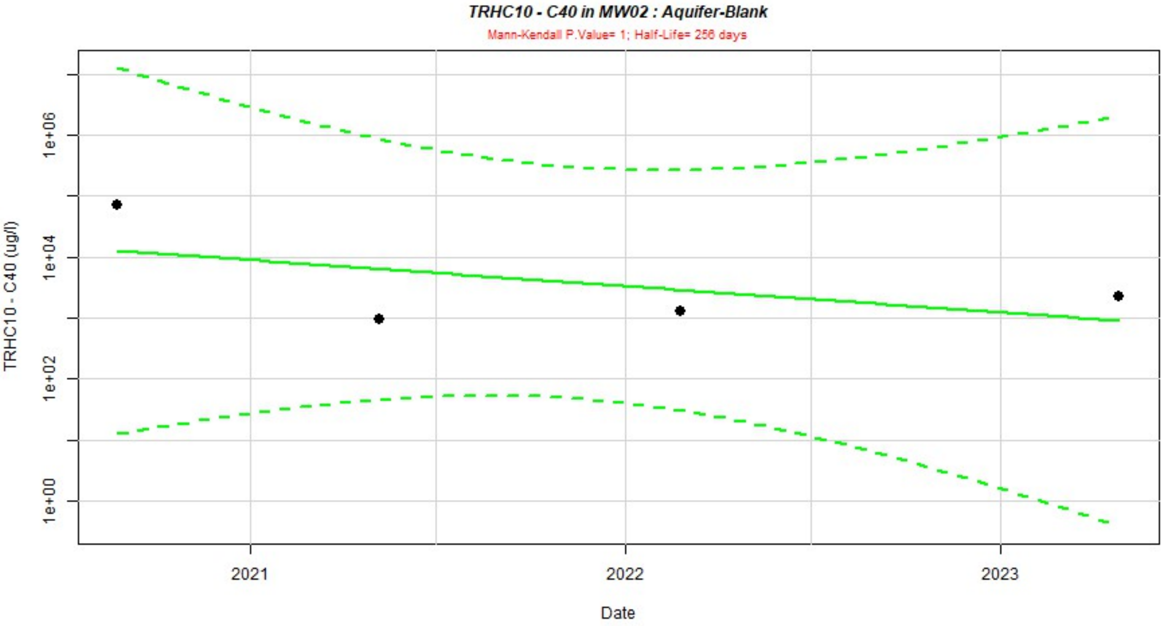


Figure 9.1: F1 TRH > C_{10} – C_{40} trend – MW02 (Mann Kendall analysis)

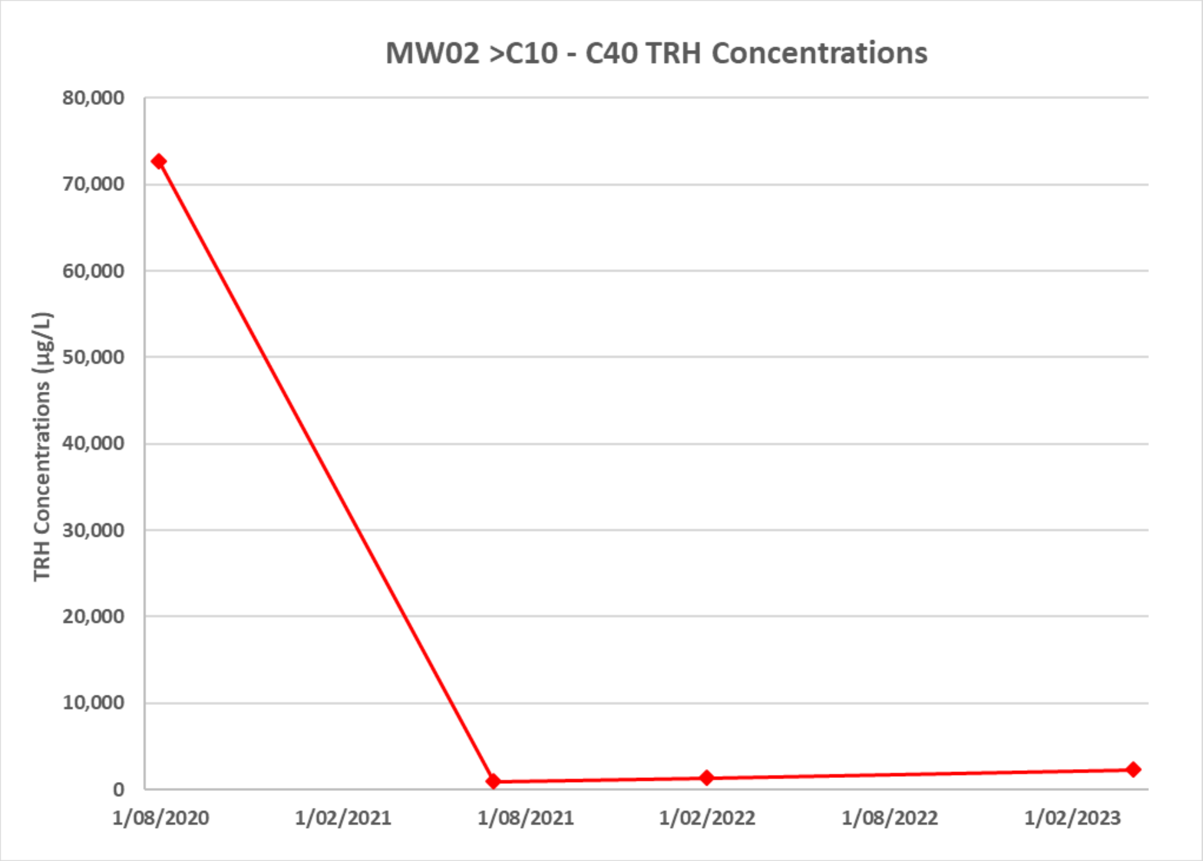


Figure 9.2: TRH > C_{10} – C_{40} concentration trend – MW02

The observation of an apparent and statistically significant decreasing trend graph is complicated by the likely potable water influence and sudden reduction in TRH concentrations reported at MW02 as part of the Additional ESA completed in 2021. It is further complicated by the potential slow rebound that may be occurring. Regardless, and whilst there is an insufficient sample size to evaluate whether there is a statistically significant decreasing trend, it can be assumed that a stable trend is present to support the primary lines of evidence. This is also evidenced by the immobile nature of the plume.

It is worthy of note that downgradient monitoring well MW01 has persistently reported low and consistent concentrations of TRH (refer to Table 10 of Appendix G). A similar concentration has also been reported at MW103, which is further down gradient. It is plausible that this represents the migration of contamination from MW02, however the low concentrations and presence of other potential sources along the flow path make this difficult to confirm.

9.3 Secondary lines of evidence

Dissolved phase plumes undergoing biodegradation typically progress from aerobic to anaerobic conditions given sufficient time. The typical order of reactions is provided in Table 9.2, below.

Theoretically, each of the reactions listed below should be mutually exclusive and occur one after the other. However, groundwater geochemical conditions can vary significantly over short spaces. Since groundwater samples are a mix of the microenvironments sampled across the screen length, a groundwater sample can show evidence of multiple processes at once. The most common pattern observed at petroleum release sites is that iron reduction and methanogenesis seem to be restricted to the higher contaminant concentration areas (e.g. source areas) with the other reactions (oxygen, nitrate, and sulfate depletion) occurring throughout the plume (CRC CARE, 2010; AFCEE, 1995).

Study results have also shown that overall, the anaerobic processes of sulphate reduction and methanogenesis tend to dominate the biodegradation processes of petroleum impacted groundwater (CRC CARE, 2010; AFCEE, 1995; Newell et al. 1995). Changes in the concentration of the relevant geochemical indicators within the plume relative to background concentrations provide indirect evidence of microbial degradation of contaminants.

The spatial patterns identified on-site with respect to natural attenuation are described in Table 9.2 below.

Table 9.2: Natural attenuation reactions and indicator trends

Order of reaction	Terminal electron acceptor process	Geochemical Indicator in source zone	Apparent pattern
1	Aerobic respiration	Dissolved Oxygen/ Redox - Reduction	☑
2	Denitrification	Nitrate (NO_3^-) - Reduction	☑
3[1]	Manganese (IV) reduction	Manganese (Mn^{2+}) - Increase	☑
3[1]	Fe (III) reduction	Ferrous Iron (Fe^{2+}) – Increase	☑
4	Sulfate reduction	Sulfate (SO_4^{2-}) – Reduction	☑
5	Methanogenesis	Methane (CH_4) - Increase	☑

Note:
1 – Iron reduction and manganese reduction occur at around the same redox state.

Overall, it appears that natural attenuation is occurring as strong indicators are present in the hydrocarbon plume based on the Monitored natural attenuation (MNA) data collected during the previous (February 2022) and this monitoring event. MNA data from the February 2022 monitoring event and the most recent round of data have been presented graphically below. This is described further in the following sections for each indicator across three wells selected: up-gradient (MW04), within the source zone (MW02) and down-gradient (MW10) and the observed trends.

Dissolved oxygen

The below Figures 9.3 and 9.4 display trend in dissolved oxygen across the plume. Dissolved oxygen is considered to be low and depleted within the plume, however concentrations of dissolved are relatively consistent across the majority of the site. Concentrations upgradient, downgradient and within the plume have generally decreased since the first round of monitoring completed in August 2020, representative of natural attenuation occurring.

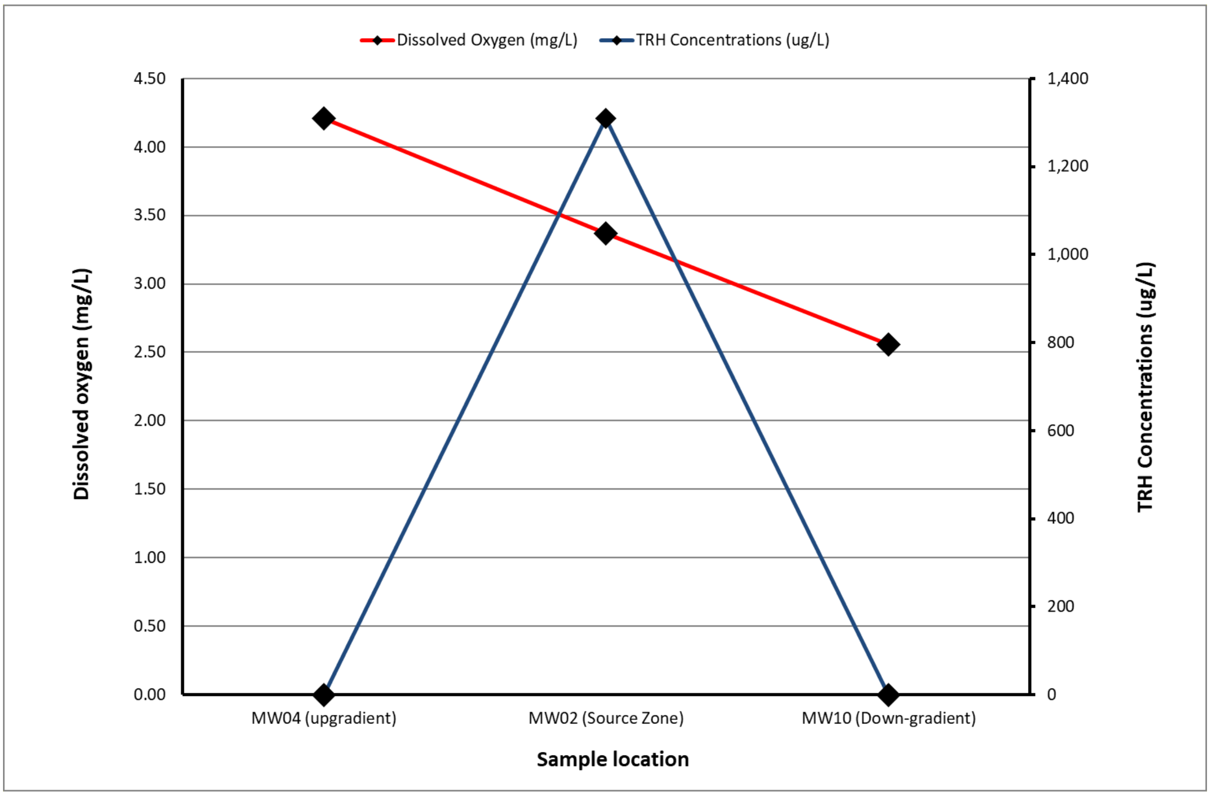


Figure 9.3: Dissolved oxygen – February 2022

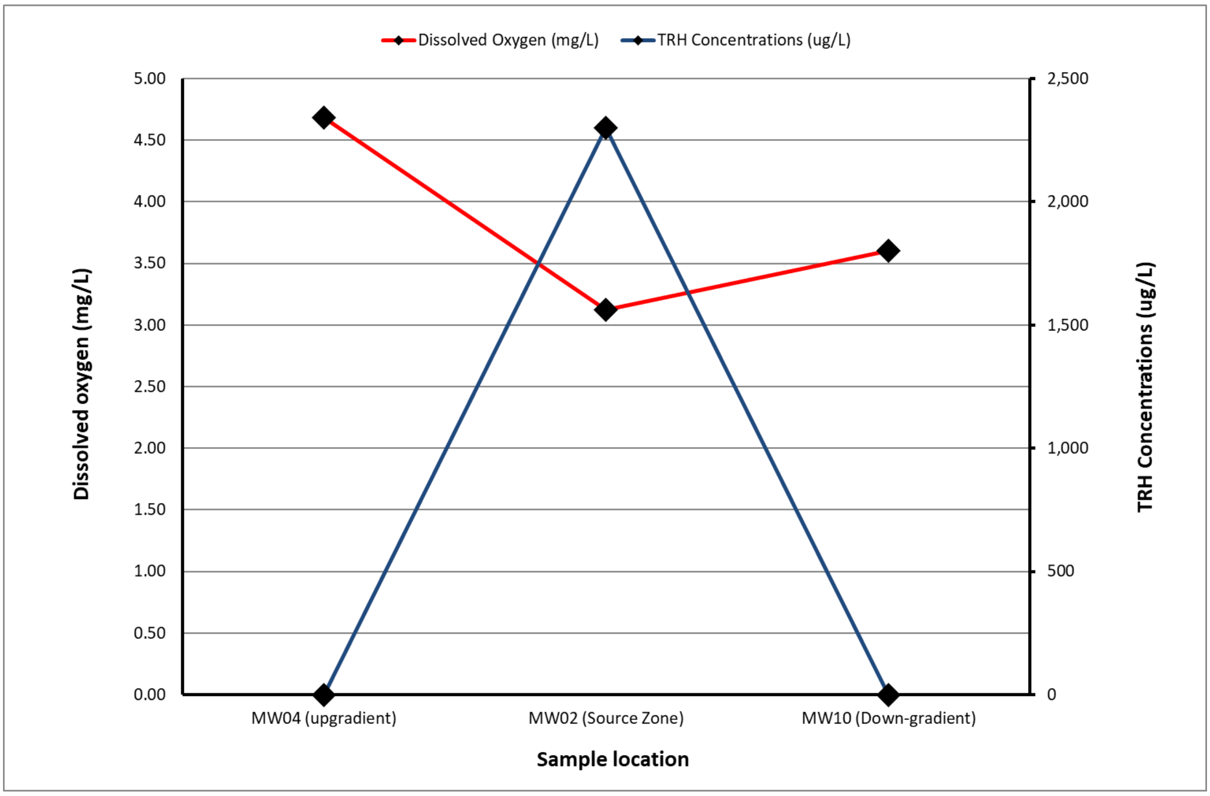


Figure 9.4: Dissolved oxygen – April 2023

Redox

The redox (reduction-oxidation) value is an indicator of whether the groundwater is well oxygenated or reducing. Values less than 400 mV are indicative of moderately reducing environments, and more than 400 mV are representative of well oxygenated environments.

Redox values are generally consistent across the site, ranging from 67.1 mV to 248.1 mV. These concentrations suggest oxygen is being depleted by mirco-organsims across the majority of the site.

Denitrification

The below Figures 9.5 and 9.6 on the following page displays the trend in nitrate across the plume. There is a clear correlation between the centre of the plume and nitrate concentrations, noting that upgradient well MW04 appears to have been slightly influenced by the plume during the February 2022 round.

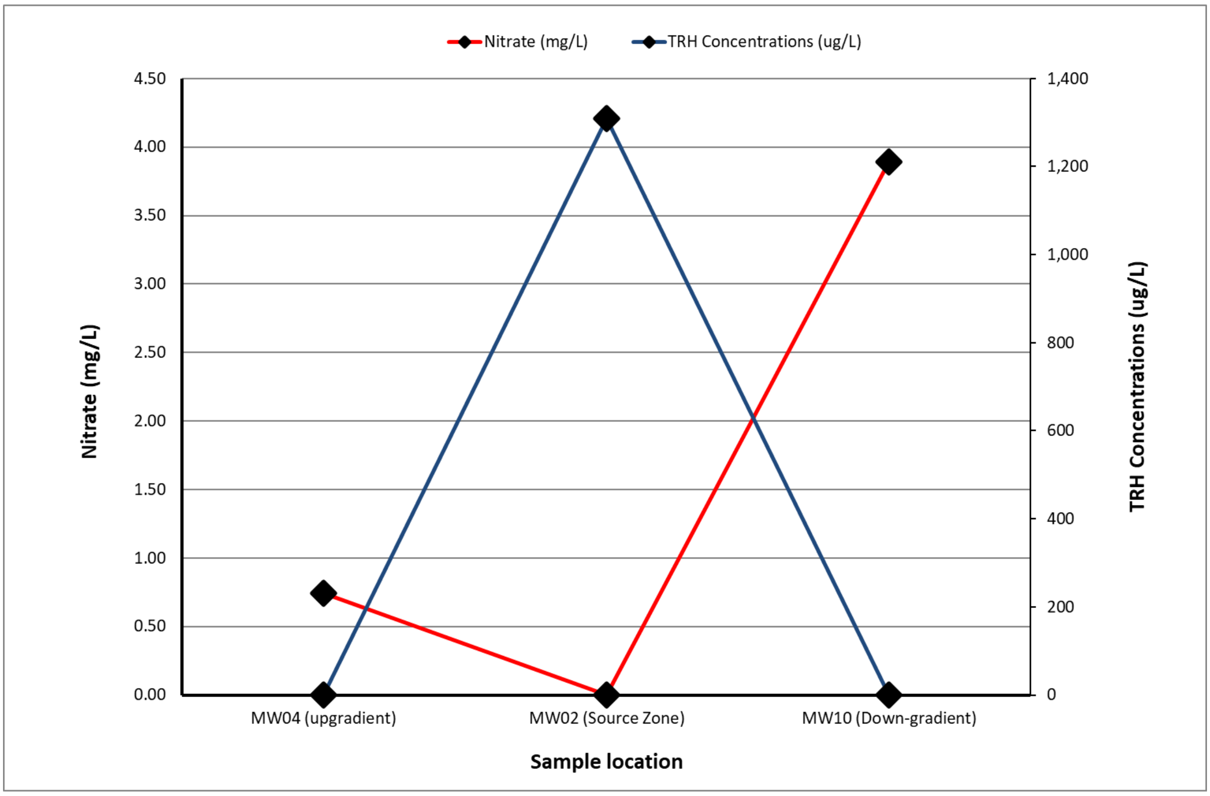


Figure 9.5: Nitrate concentrations – February 2022

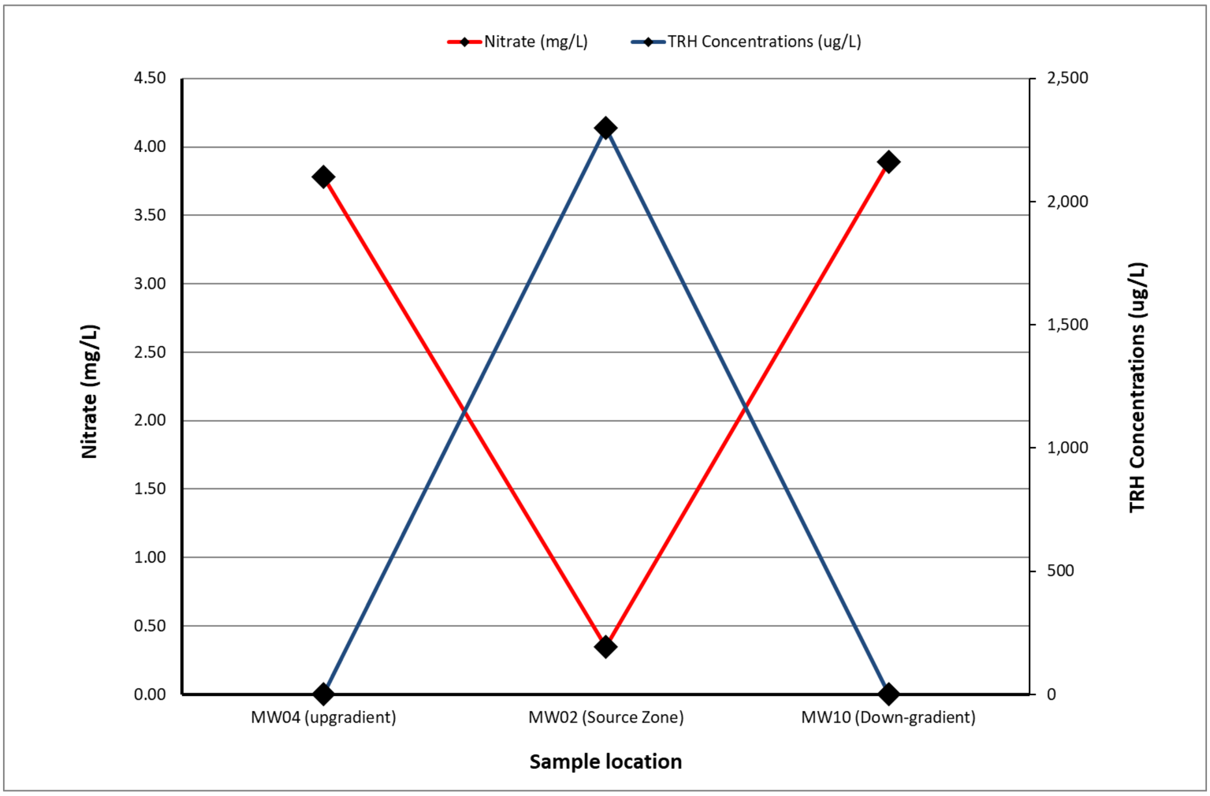


Figure 9.6: Nitrate concentrations – April 2023

Manganese and Iron (III) reduction

The below Figures 9.7, 9.8 and 9.9 displays the trends in manganese and Fe(III) across the plume. It is noted that manganese was not analysed during the February 2022 GME.

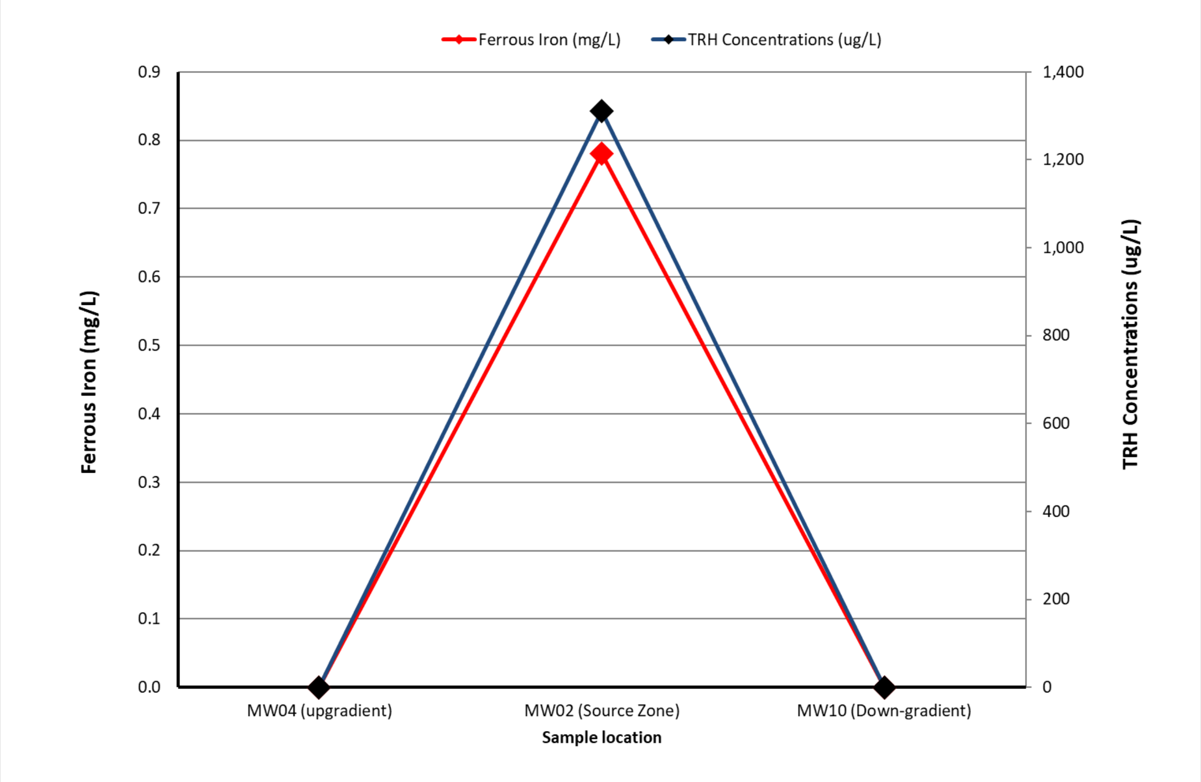


Figure 9.7: Fe (III) concentrations – February 2022

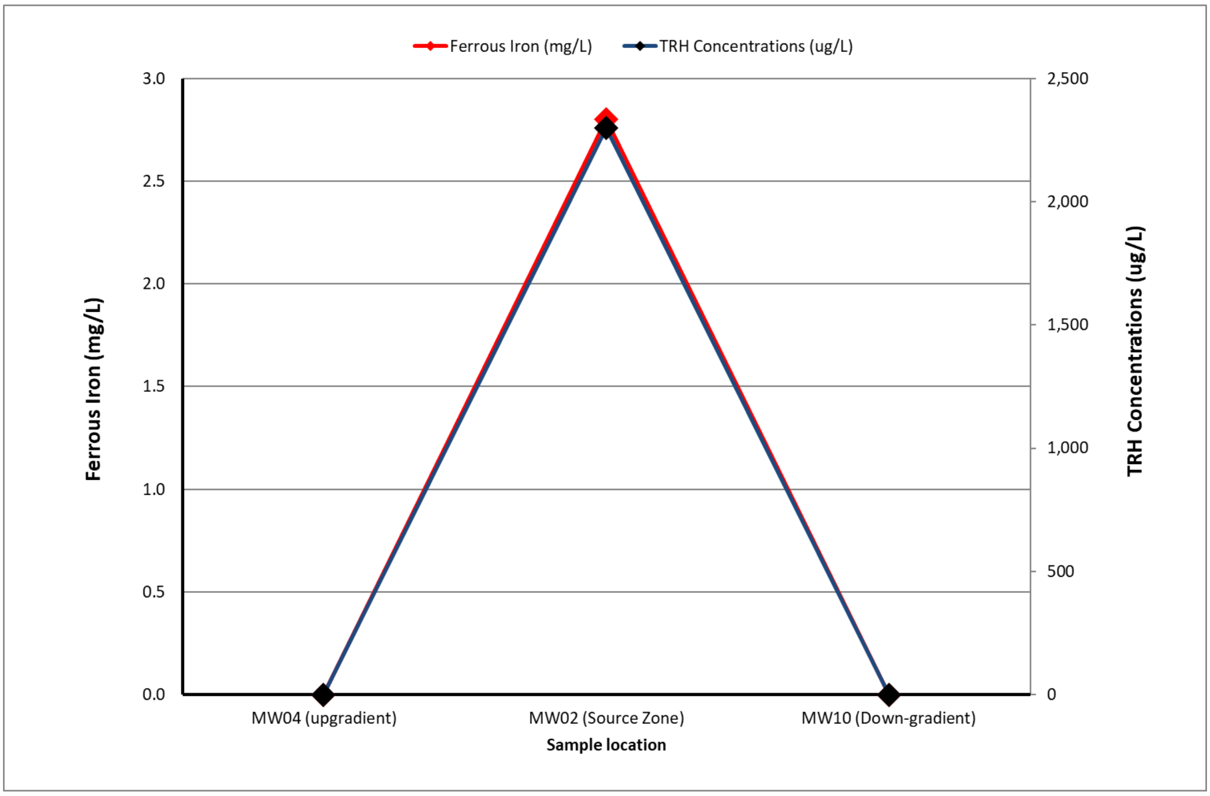


Figure 9.8: Fe (III) concentrations – April 2023

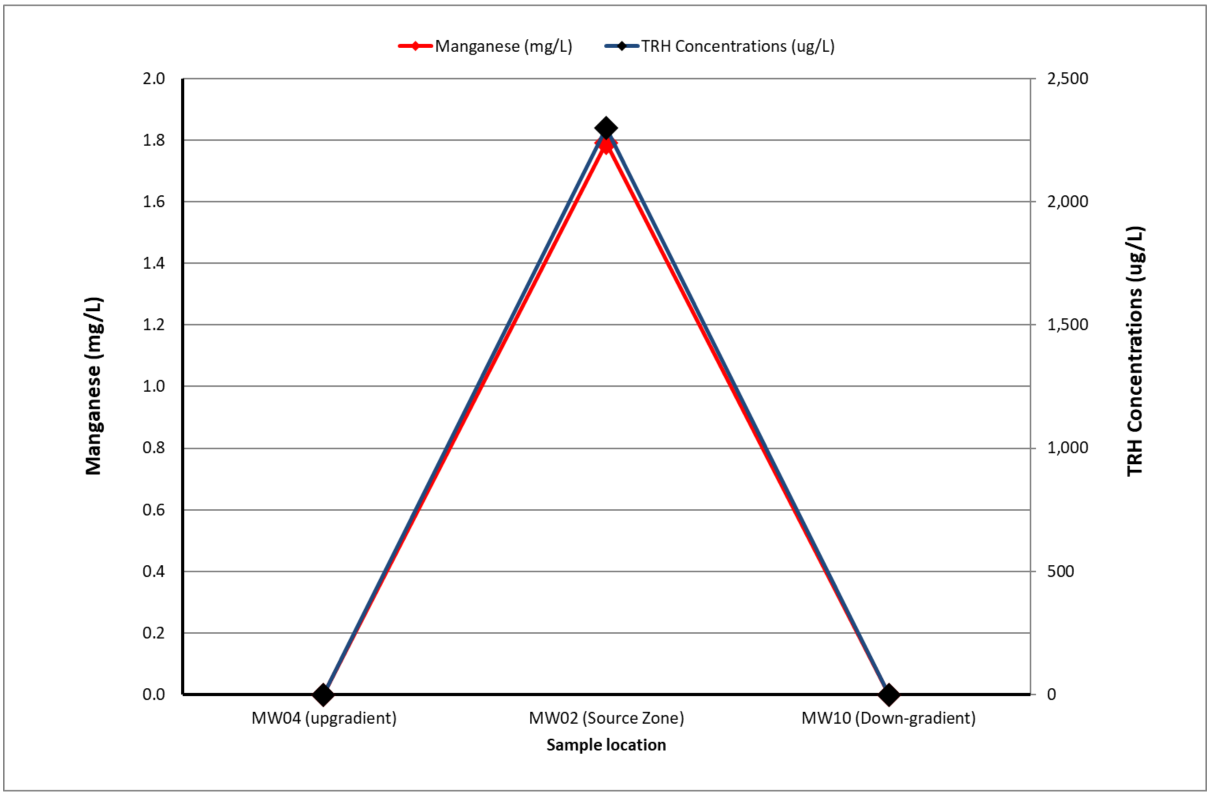


Figure 9.9: Manganese concentrations – April 2023

There is a clear correlation between the centre of the plume and the increase of manganese and Fe(III) concentrations, as shown above.

Sulfate reduction

The below Figures 9.10 and 9.11 below display the trends in sulfate across the plume.

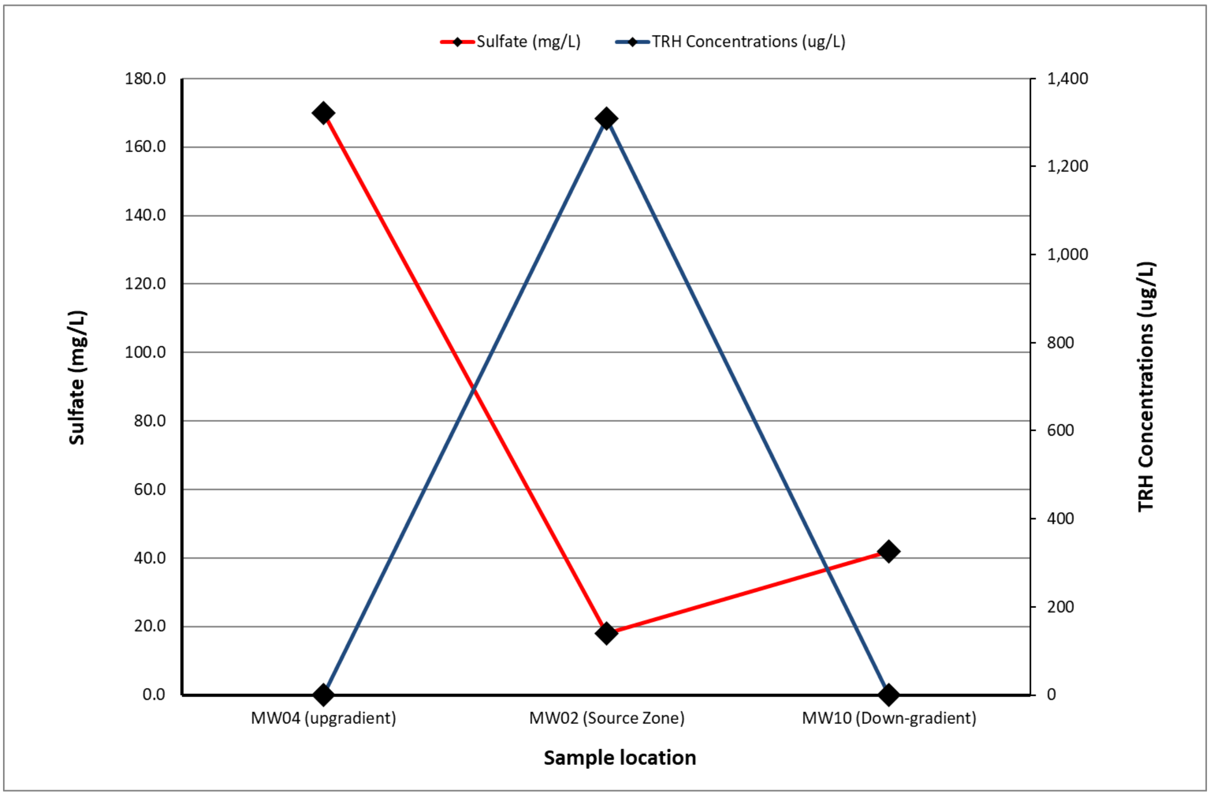


Figure 9.10: Sulfate concentrations – February 2022

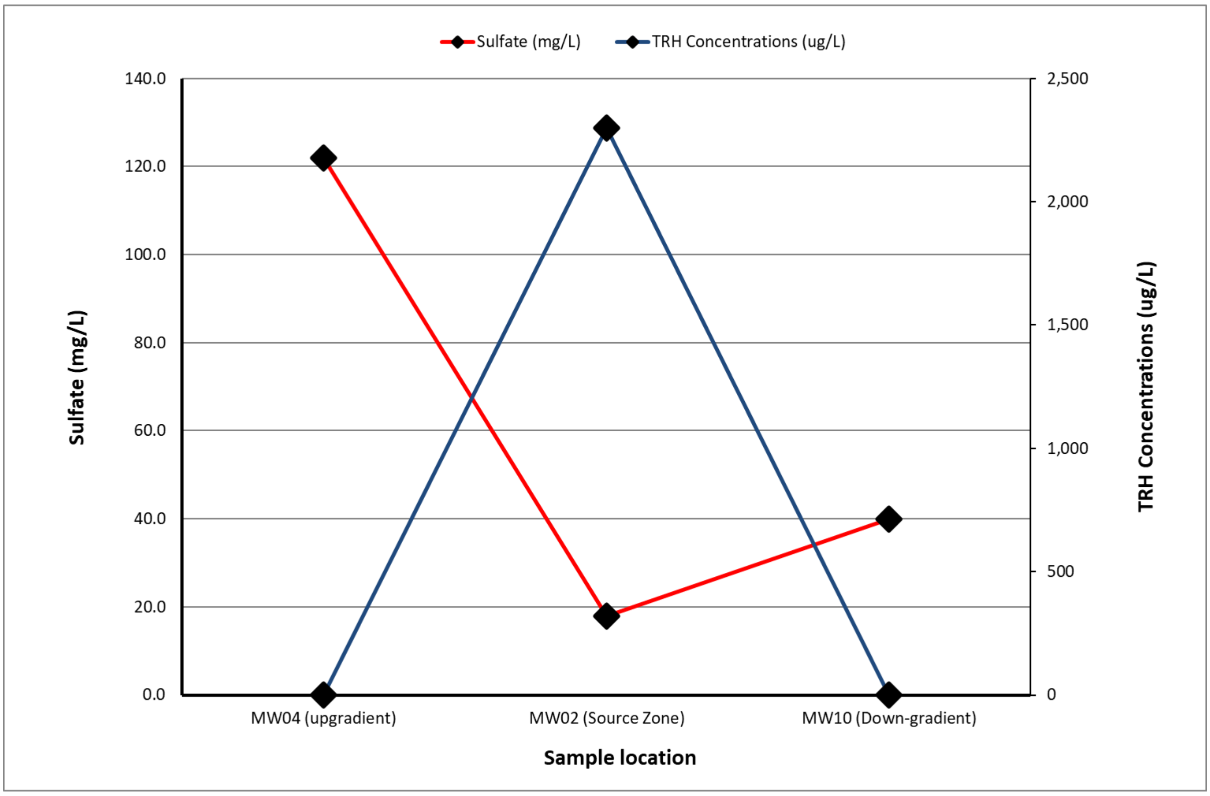


Figure 9.11: Sulfate concentrations – April 2023

The reduction of sulfate concentrations appears to be consistent and occurring within the plume, however downgradient wells also appear to be slightly influenced by the plume.

Methanogenesis

The below Figures 9.12 and 9.13 below display the trends in methane across the plume.

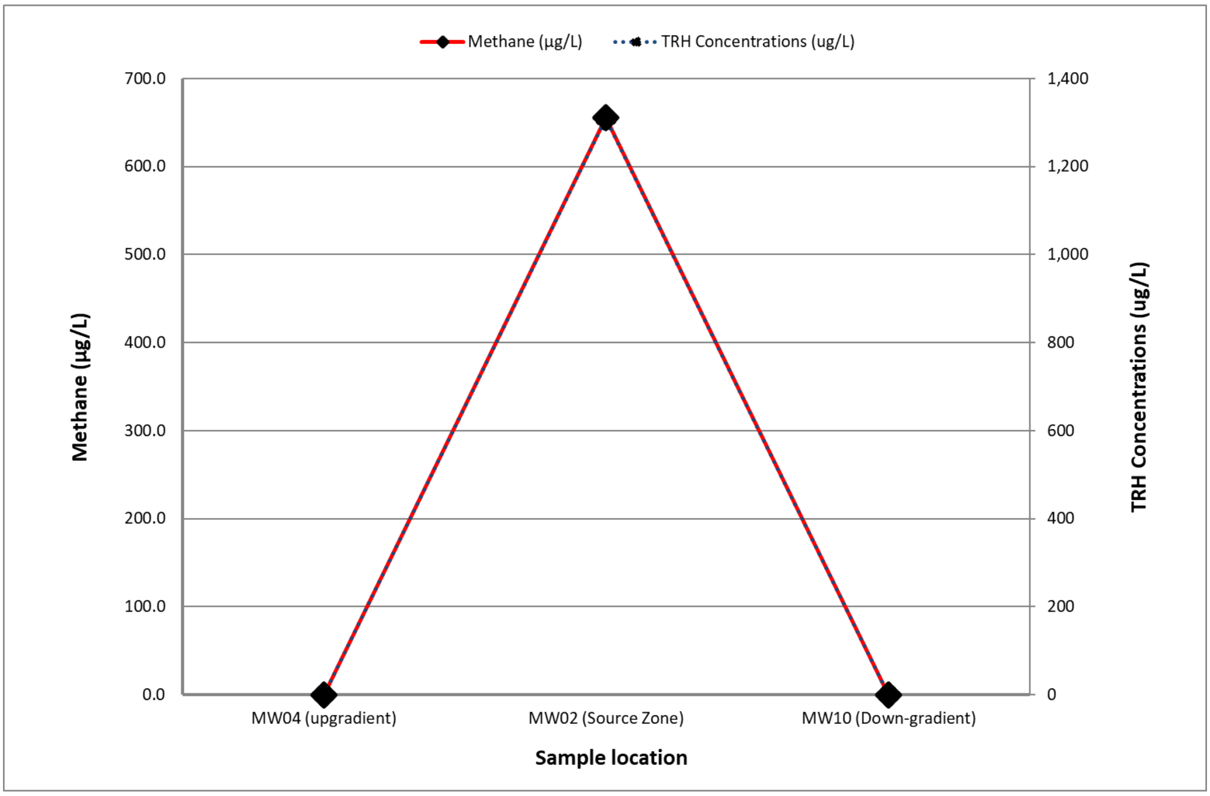


Figure 9.12: Methane concentrations – February 2022

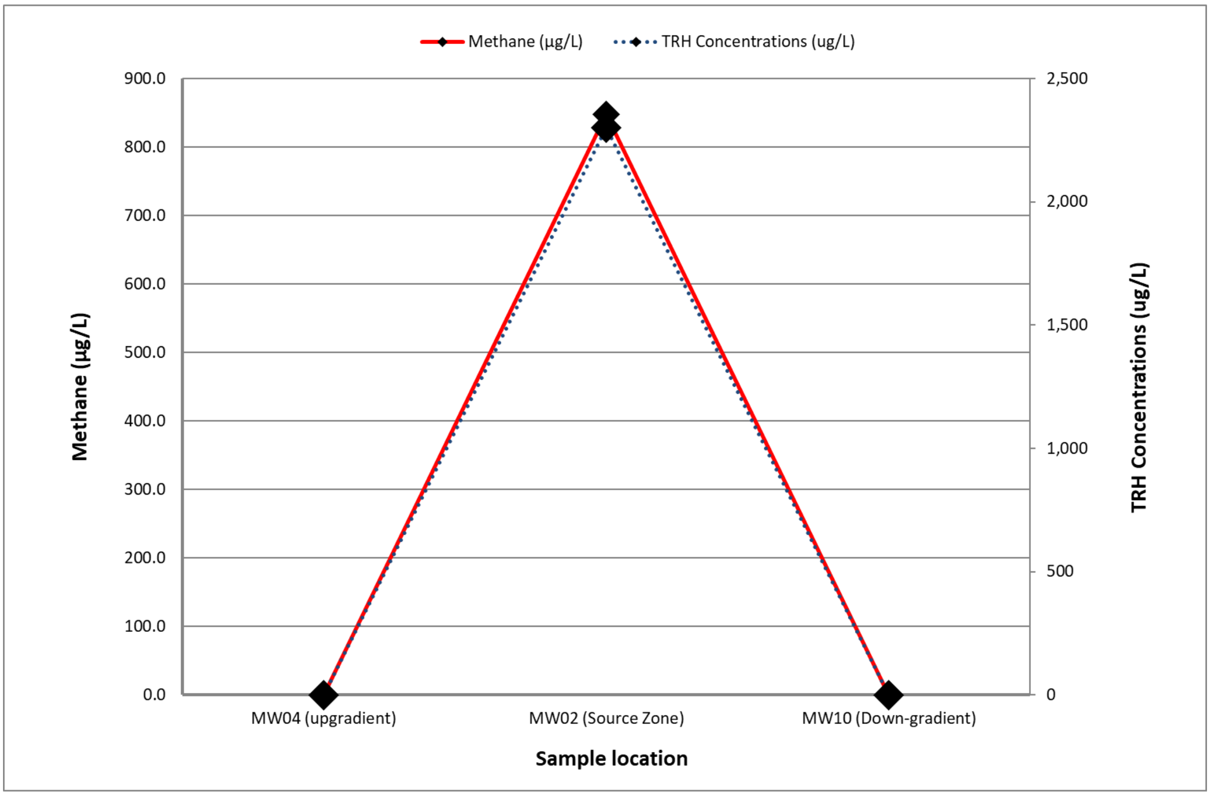


Figure 9.13: Methane concentrations – April 2023

There is a clear correlation between the centre of the plume and methane concentrations, as depicted above with methane being generated in the centre of the plume.

9.4 Tertiary lines of evidence

Based on the primary and secondary lines of evidence discussed above, it was not considered necessary to provide tertiary lines of evidence that MNA processes are occurring within the plume i.e. demonstrating the presence of bacterial fauna which are known to degrade TRH. The evidence of stable TRH concentrations, an immobile plume and the trend of chemical indicator parameters are adequate to assess the aquifers ability to attenuate hydrocarbon contamination.

10.0 Conceptual site model update

A conceptual site model is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. An understanding of potential exposure scenarios is necessary to evaluate the suitability of a site for a particular land use.

This conceptual site model has been updated based on the information obtained as part of this supplementary DSI, and is related to soil, groundwater and surface water contamination issues at the site.

10.1 Sources of contamination

The potential and actual sources of soil, surface water and groundwater contamination for the site, and those which are considered to represent a potential environmental liability on-site are summarised below:

Potential sources

- **Current and historical operation of the Roundhouse building:** The site and Roundhouse building has a long history of industrial activities, with railway operations commencing in the early 1800's. The soil and groundwater contamination results from the following:
  - the current and historical application, use and storage of fuels, oils, solvents and degreasers;
  - the integrity of the locomotive maintenance pits / stormwater and drainage network; and
  - current and historical general locomotive maintenance and machining activities.

- **VOCs in groundwater:** The presence of VOCs in groundwater in previous assessments remains a potential source. These should be included in ongoing monitoring, however they have not been included as an actual source for further consideration in the CSM. Currently, the potential inhalation of vapours produced by chlorinated solvents is considered unlikely.

- **EIL exceedances:** The EIL exceedances of heavy metals discussed in previous sections (refer Section 8.1.3) are described as potential sources. That is, they are not considered significant enough to define as a source of contamination in the context of the CSM.

- ***Management limits / aesthetic issues:*** TRH concentrations in soil were reported to exceed the adopted management limits as part of this, and previous investigations completed at the site. The localised presence and magnitude of the TRH concentrations reported within the four-foot of the railway line are considered to represent aesthetic issues that require appropriate management, and have therefore not been further considered in the development of the CSM. These potential sources should be addressed in the IEMP.

Actual sources

- **Lead and asbestos – Site infilling and waste disposal areas.** Lead in excess of the commercial/industrial HIL is widespread but discontinuous within the southern and north-western portions of the site. The distribution of non-friable ACM is widespread in and on soil within the southern and north-western portion of the site. No distinction has been attempted to separate the presence of ACM on-soil vs in-soil.

- **LNAPL – Locomotive maintenance bays.** A LNAPL thickness of 0.53 m was recorded at MW06, located adjacent to the roundhouse building. The LNAPL presence is localised and unlikely to be mobile, and likely associated with residual LNAPL saturation rather than an ongoing source.

- **TRH in groundwater – Former diesel refuelling gantry.** Dissolved phase petroleum hydrocarbon contamination has been identified in groundwater. The TRH presence is limited in extent and the trend of chemical indicator parameters are adequate to assess the aquifers ability to attenuate hydrocarbon contamination.

- **PFAS in groundwater**. Exceedances of the 99% level of species protection criteria for PFOS were reported in groundwater at the site. The source of which is likely associated with a variety of activities, and its presence is an artifact of historical operations rather than particular events. Whilst an immediate risk to human health and the environment is considered unlikely, it represents a data gap warranting further consideration.

- **Chromium (VI) in groundwater.** Exceedances of the 95% level of species protection criteria for chromium (VI) were reported in groundwater at the site. The source of which is likely associated with a variety of historical operations. Whilst delineation off-site remains incomplete, it is not considered likely to represent an unacceptable risk to human health or the environment given the discussion provided in 8.2.5.

- **Stormwater and drainage –** The stormwater and drainage system connects the repair bays within the Roundhouse building to the former effluent treatment plant via underground infrastructure including the API separator and arrestor pits. Whilst gross contamination has not been identified to be mobilising off-site due to the presence of arrestor pits and API separators, there are data gaps which are described in Section 11.

10.2 Exposure and migration pathways

The pathways for potential contaminant migration and potential exposure to receptors are controlled by the geological environment, the built environment overlying the site and in adjacent areas, as well as physical separation distances between sources and potential receptors.

The considered exposure and migration pathways at the site, and whether they are considered plausible includes the following:

Soil

- exposure via dermal contact (incidental) and ingestion (incidental) of lead contaminated soils – Plausible;
- exposure via inhalation (dust and airborne asbestos fibres) of contaminated soils – Plausible;
- migration and exposure of vapours from contaminated soils / groundwater and/or LNAPL – Unlikely based on the absence of volatile petroleum hydrocarbons;
- generation and pooling of ground gases that may present an explosive hazard – Unlikely;
- migration or transport of soil from the site via runoff, relocation or dust migration – Plausible; and
- exposure to contaminated soils via plant root uptake – Unlikely.

Groundwater

- migration and exposure of vapours from contaminated groundwater and/or LNAPL – Unlikely;
- groundwater migration off-site or to an underlying aquifer – Plausible;

- direct contact or ingestion of impacted groundwater – Unlikely; and
- discharge of impacted groundwater to surface water bodies – Unlikely based on distance to the river and discussion in 8.2.5. The nearby shallow drainage channel identified in Section 2.2 is unlikely to be in contact with groundwater at 5 m (approx.) below the ground surface.

Surface water

- mixing, erosion and suspension of soil and contaminants in runoff – Unlikely given the presence of arrestor pits and API separator; and
- off-site migration of dissolved contaminants via surface water such as stormwater – Plausible.

The viability of these pathways is further assessed in Section 10.4.

10.3 Receptors

The following potential receptors have been identified at the site:

Human receptors

- on-site occupants in a commercial/industrial scenario on-site;
- on-site occupants in a recreational scenario on-site (visitors to the site);
- on-site excavation / intrusive maintenance workers;
- potential users of groundwater for supply purposes; and
- private and recreational users of the Mulwaree River (i.e. members of the public and recreational users).

Ecological receptors

- on-site terrestrial ecological receptors including soil processes, plant species and organisms that may inhabit or contact soils; and
- freshwater aquatic organisms off-site within the Mulwaree River.

10.4 Conceptual site model summary

A source-pathway-receptor (SPR) linkage is considered to be present when a pathway links a source with a receptor. These linkages explain when there may be risks to the receptor, either now or in future.

All SPR linkages considered to be potentially complete are summarised in Table 10.1, below.

Table 10.1: Summary of Source-Pathway-Receptor linkages

Source	Pathway	Receptor(s)
Lead in soil – Fill material	Direct and dermal contact, ingestion and/or dust inhalation	– on-site occupants in a commercial/industrial land use scenario. – visitors in a recreational land use scenario. – on-site intrusive maintenance workers.
Asbestos in and on soil	Indoor / outdoor dust inhalation (airborne fibres)	– on-site occupants in a commercial/industrial land use scenario. – visitors in a recreational land use scenario. – on-site intrusive maintenance workers.
TRH, arsenic, copper, lead and zinc in soil – Fill material	Ecological exposure, direct contact, ingestion and/or absorption.	– on-site terrestrial ecological receptors including on-site soil processes, plant species and organisms that may inhabit or contact soils.
Stormwater and drainage – TRH and PFAS in stormwater	Off-site migration of contaminants via surface water such as stormwater	– flora, fauna (terrestrial and freshwater) and/or aquatic organisms within the Mulwaree River.

Contaminated soils – human health

This section includes discussion of the identified complete exposure pathways associated with lead in soil and potential airborne asbestos fibres:

- direct contact with contaminated soil (lead);
- inhalation of dust from contaminated soil, airborne dust (lead and asbestos); and
- incidental ingestion of contaminated soils, airborne dust (lead).

The uncovered lead contaminated surface soil provides a direct exposure pathway to site occupants and intrusive maintenance workers via dermal contact, dust inhalation or ingestion of contaminated soil. Elevated concentrations of lead were reported to be widespread but discontinuous in fill material across the southern and north-western portion of the site which represents an unacceptable risk to human health. This potential risk is raised should the site be occupied for recreational / open space purposes which includes the presence of children on-site.

Non-friable ACM in and on soil provides a direct exposure pathway to on-site occupants and intrusive maintenance workers via airborne fibre inhalation if not appropriately managed. At depth the risk is reduced, however the areas where highly concentrated ACM is buried (i.e. within the vicinity of TP06 as part of the DSI (Cavvanba, 2021a)) at depth poses a high risk if the material is disturbed and should therefore be treated as friable during mechanical disturbance. The management of asbestos is further discussed in Sections 3.3 and 11.1.

Contaminated soils – ecological

Copper, arsenic, lead, zinc and / or TRH were reported to exceed the adopted ecological assessment criteria. These criteria are designed for the protection of the upper 0 – 3 m of the soil profile, which corresponds to the root zone and habitation of many species. Given the highly disturbed nature of the site, presence of fill material and lack of vegetation and habitat for potential ecological receptors to exist, it is considered unlikely that a potentially complete SPR linkage exists. However, these exceedances should be considered in conjunction with human health criteria exceedances and assist with decision making regarding the proposed future site management and/or remediation.

Contaminated groundwater – Freshwater ecosystems

This section discusses root uptake of contaminants in groundwater, and potential off-site groundwater migration.

The presence of chromium (VI) and PFAS in groundwater which has not been delineated beyond the site boundary provides a potential exposure pathway to off-site freshwater aquatic organisms through direct contact, ingestion and/or absorption of contaminated groundwater. Root uptake is not considered a plausible pathway given the depth to groundwater and absence deep rooted vegetation. However, given the absence of sensitive ecological receptors within the immediate vicinity and proximity of the site to the Mulwaree River (570 m), the presence of these contaminants in groundwater on-site are unlikely to represent an unacceptable risk to ecological receptors off-site. There is, however an obvious data gap associated with offsite migration of PFAS. The significance of these exceedances, and whether there is a potential unacceptable risk to ecological receptors off-site are to be further evaluated as part of future groundwater monitoring.

Stormwater and drainage – TRH and PFAS in stormwater

The presence of TRH and PFAS in surface water on-site provides a potential exposure pathway to off-site freshwater aquatic organisms through direct contact, ingestion and/or absorption of discharged stormwater. The significance of these exceedances, and whether there is a potential unacceptable risk to ecological receptors off-site are to be further evaluated as part of future surface water monitoring.

11.0 Data gaps update

The continual refinement of the conceptual site model is facilitated through the identification and addressing of key data gaps. Any subsequent investigative efforts must focus on addressing the critical data gaps that remains in a manner that is proportional to the uncertainties identified and ensure the data collected is representative of the assessment area.

Based on Cavvanba's understanding of site conditions developed through information gathered to date, the following discussion is made regarding the outstanding data gaps:

- *Data Gap 1: Groundwater contamination (TRH, PFAS and chromium).* The varying magnitude and trends of TRH in groundwater within the vicinity of the former diesel refuelling gantry and the Roundhouse where active maintenance is occurring remains a data gap. Additional uncertainty is introduced through the increase in LNAPL thickness at MW06, and potential for TRH rebound at MW02. These uncertainties make groundwater remediation decision making premature. Additionally, there are uncertainties regarding the source or sources of PFAS and the plume geometry.

  Cavvanba considers that these uncertainties can be rectified through future routine and planned groundwater monitoring events, and should be undertaken to assist decision making regarding remediation options. It is possible that for TRH, the outcome will be passive remediation such as monitored natural attenuation. The feasibility of LNAPL removal at this stage is unknown.

- *Data Gap 2: Site infilling and waste disposal areas*. Cavvanba considers that the nature and extent of buried waste material within the eastern and southern portion of the site has been established, sufficient to facilitate future remediation and/or management options for this area.

- *Data Gap 3: Asbestos in and on soil*. There is adequate information to facilitate future remediation and/or management options for ACM on-site.

- *Data Gap 4: Site history*. The site has a long and complicated history with over 100 years of heavy industrial activity, and a change in site operations and management from approximately 1989 when the GLRPS acquired the lease. Whilst it is acknowledged that there are inherent uncertainties in the site history, Cavvanba considers that there is sufficient soil and groundwater data and information to support the development of remediation options for the site.

- *Data Gap 5: Stormwater and drainage*. Cavvanba's understanding of the stormwater and drainage network on-site has been sufficiently established through the data gathered as part of this investigation. However as a result, there are data gaps associated with the integrity of the pipework at the southern discharge point, and whether there are resultant soil and groundwater contamination issues. This also includes the chemical composition of stormwater at the discharge point and is particularly relevant given the presence of TRH, and PFAS in excess of the 99% species protection levels.

11.1 Asbestos management

In June 2023, a hand-picking exercise was completed across the entire site area. A total of approximately 80 kg of ACM was identified and removed as part of the works. Areas of surface ACM were categorised as the following:

- higher risk area, being an area where multiple fragments of ACM were identified and creates a higher risk of generating airborne fibres if disturbed; and
- lower risk area, being areas where isolated ACM fragments were identified and presents a lower risk due to the incidental presence and non-friable nature.

The June 2023 event was undertaken after these Supplementary DSI investigations as a separate exercise and was documented in a letter report titled:

- Cavvanba Consulting (30 June 2023) *Asbestos Management – Goulburn Roundhouse, 12 Braidwood Road, Goulburn NSW 2580* (ref. 20025.76 L03).

The extent of asbestos letter does not change the outcome of the asbestos assessment described in this Supplementary DSI. However, it should be referred to for operational matters in accordance with the IEMP. It has been included as Appendix I.

12.0 Conclusions and recommendations

Based on the scope of works completed, the overarching objectives are considered to have been met and an increased understanding of contamination at the site has been established, sufficient to assist in addressing and closing data gaps previously identified and provide an updated assessment on potential risks to human health and/or the environment on and off-site.

In the context of the conceptual site model developed for the site, the following conclusions have been drawn:

Lead in soil

- The distribution of lead contaminated soils based on all available data can be summarised as widespread but discontinuous within the southern and north-western portion of the site. The magnitude of which, varies due to a mosaic of historical activities and progressive infilling that has occurred on-site.

Asbestos

- Asbestos containing material is widespread and extends into areas where access was previously obstructed due to the presence of rail-related infrastructure. This includes beneath locomotives and rolling stock on railway lines within the southern portion of the site and in filled areas on the eastern side of the roundhouse (Bays 1 to 15). The presence of ACM on soils exceeds health screening levels for asbestos.
- Asbestos containing material was identified in soils within filled areas to the east of the roundhouse and adjacent to the north of the administration building. These were areas where ACM has not been previously identified.
- Continued asbestos management events such as those prescribed in the IEMP, have reduced the immediate hazard of ACM at the surface.

Groundwater

- Groundwater SWLs ranged from 4.190 m (MW102) in the north-eastern portion of the site, to 7.365 m (MW02), in the north-western portion of the site which were reported to have lowered since the 2022 monitoring event with an average decrease of 0.7 m recorded across the site. The measured standing water levels and calculated groundwater elevations indicate groundwater flow is consistent with that previously reported, predominantly flowing in a north-easterly direction.
- The nature and extent of groundwater contamination can be summarised as follows:
  - LNAPL was identified at a measurable thickness of 0.53 m at MW06, an increase of 0.37 m from the previous monitoring event. Its presence is localised, unlikely to represent a vapour intrusion risk and likely associated with residual LNAPL saturation rather than an ongoing source;
  - all groundwater samples collected on-site were reported below the adopted CRC CARE health screening levels for vapour intrusion;
  - TRH concentrations at MW02, adjacent to the refuelling gantry remain low and localised in extent, however are likely to be artificially reduced by the previously identified potable water influence;
  - VOCs (i.e. TCE / DCE) were not detected above the laboratory limit of reporting;
  - Sum of PFHxS and PFOS were detected in groundwater on-site, at a maximum concentration of 3.05 µg/L, however its presence in groundwater is unlikely to represent an unacceptable risk to ecological receptors off-site; and

- chromium (VI) was detected in groundwater at a maximum concentration of 30 µg/L, and whilst it has not been delineated off-site, is unlikely to represent an unacceptable risk.

Stormwater and drainage

- The stormwater and drainage system connects the repair bays within the Roundhouse building to the former effluent treatment plant via underground infrastructure such as the API separator and arrestor pits. Whilst gross contamination has not been identified to be mobilising off-site due to the presence of arrestor pits and API separators, there are some data gaps which remain outstanding.

- TRH was detected in surface water on-site, at a maximum concentration of 1,900 µg/L, and PFOS at a maximum concentration of 0.03 µg/L. The significance of these exceedances and whether a potential unacceptable risk to ecological receptors off-site remains uncertain based on the current dataset.

Through the development and continual refinement of the conceptual site model, potentially complete source-pathway-receptor linkages resulting in a potential risk to human health and the environment have been identified which require further monitoring, remediation and/or appropriate management. These are discussed in Table 12.1, below.

Table 12.1: Data gaps summation and recommendations

Data Gaps summation	Recommendation
1) Groundwater contamination (TRH, PFAS and chromium) The varying magnitude and trends of TRH in groundwater within the vicinity of the former diesel refuelling gantry and the Roundhouse where active maintenance is occurring remains a data gap. Additional uncertainty is introduced through the increase in LNAPL thickness at MW06, and potential for TRH rebound at MW02. Additionally, there are uncertainties regarding the source or sources of PFAS and the plume geometry. These uncertainties make groundwater remediation decision making premature. Cavvanba considers that these uncertainties can be rectified through future routine and planned groundwater monitoring events, and should be undertaken to assist decision making regarding remediation options. It is possible that for TRH, the outcome will be passive remediation such as monitored natural attenuation. The feasibility of LNAPL removal at this stage is unknown.	Preparation of a formal groundwater monitoring plan, and continue with routine groundwater monitoring to: – ensure that any changes in contaminant concentrations can be detected; – demonstrate plume stability, or otherwise; and – ensure the appropriate protection of groundwater human and ecological health. Assess the feasibility of LNAPL removal.
2) Site infilling and waste disposal areas Cavvanba considers that the nature and extent of buried waste material within the eastern and southern portion of the site has been established, sufficient to facilitate future remediation and/or management options for this area.	Development of remediation and/or management options to ensure the protection of human and ecological health, focussing on the removal of the potential exposure pathway.

3) Asbestos in and on soil There is adequate information to facilitate future remediation and/or management options for ACM on-site.	Implement interim management measures as per the updated *Interim Management Plan* (Cavvanba, 2022), and development of remediation and/or management options to ensure the appropriate protection of human health. Consider measures in conjunction with data gap 2.
4) Site history The site has a long and complicated history with over 100 years of heavy industrial activity, and a change in site operations and management from approximately 1989 when the GLRPS acquired the lease. Whilst it is acknowledged that there are inherent uncertainties in the site history, Cavvanba considers that there is sufficient soil and groundwater data and information to support the development of remediation options for the site.	Predominantly reconciled, however consideration should be given to obtaining historical information relating to the potential use of PFAS containing products.
5) Stormwater and drainage Cavvanba's understanding of the stormwater and drainage network on-site has been sufficiently established through the data gathered as part of this investigation. However, uncertainties remain associated with the integrity of the pipework at the southern discharge point, and whether there are resultant soil and groundwater contamination issues. This also includes the chemical composition of stormwater at the discharge point and is particularly relevant given the presence of TRH, and PFAS in excess of the 99% species protection levels.	The railway maintenance bays within the roundhouse <u>must not</u> be used for any chemical / oil collection (no products to ground) until such time that the network is deemed fit for purpose. Surface water sampling within the holding tanks at the discharge point on the eastern side of Braidwood Road *(refer to Figure B of Appendix A).* Assessment of groundwater conditions within the areas of known integrity issues, being the southern discharge point.

13.0 References

Previous Environmental Investigations and Plans

Cavvanba (August 2023) (Ref. 20025.76 L04) *Waste Classification – Grit Blasting Media, Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580.*

Cavvanba (June 2023) (Ref. 20025.76 L03) *Asbestos Management – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580.*

Cavvanba (May 2023) (Ref. 20025.76 R07) *Interim Environmental Management Plan – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580.*

Cavvanba (September, 2022) (Ref. 20025.76 R05) *Remediation Options Assessment – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580.*

Cavvanba (July, 2022) (Ref. 20025.76 L01) *Asbestos Management – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580.*

Cavvanba (July, 2022) (Ref. 20025.76 R06) *Groundwater Monitoring Event – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580*

Cavvanba (August, 2021d) (Ref. 20025.76 R03) *Additional Environmental Site Assessment – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580.*

Cavvanba (April, 2021b) (Ref. 20025.76 R02) *Sampling and Analysis Quality Plan – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580.*

Cavvanba (April, 2021c) (Ref. 20025.76 L02) *Interim Management Plan – Goulburn Roundhouse, 12 Braidwood Road, Goulburn NSW 2580*.

Cavvanba (January, 2021a) (Ref. 20025.76 R01) *Detailed Site Investigation – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580.*

Cavvanba (September, 2020c) (Ref. 20025.76 L01) *Interim Management Plan – Goulburn Roundhouse, 12 Braidwood Road, Goulburn NSW 2580*.

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EPA (2016) *Designing Sampling Programs for Sites Potentially Contaminated by PFAS: Guidance Document*. EPA, Sydney.

EPA (2016) *Contaminated Land Management: Draft Guidelines for the NSW Site Auditor Scheme (3rd edition)*. EPA, Sydney.

EPA (1995a) *Contaminated Sites: Guidelines for the Vertical Mixing of Soil on Former Broad-acre Agricultural Land*. NSW EPA, Sydney.

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Figures

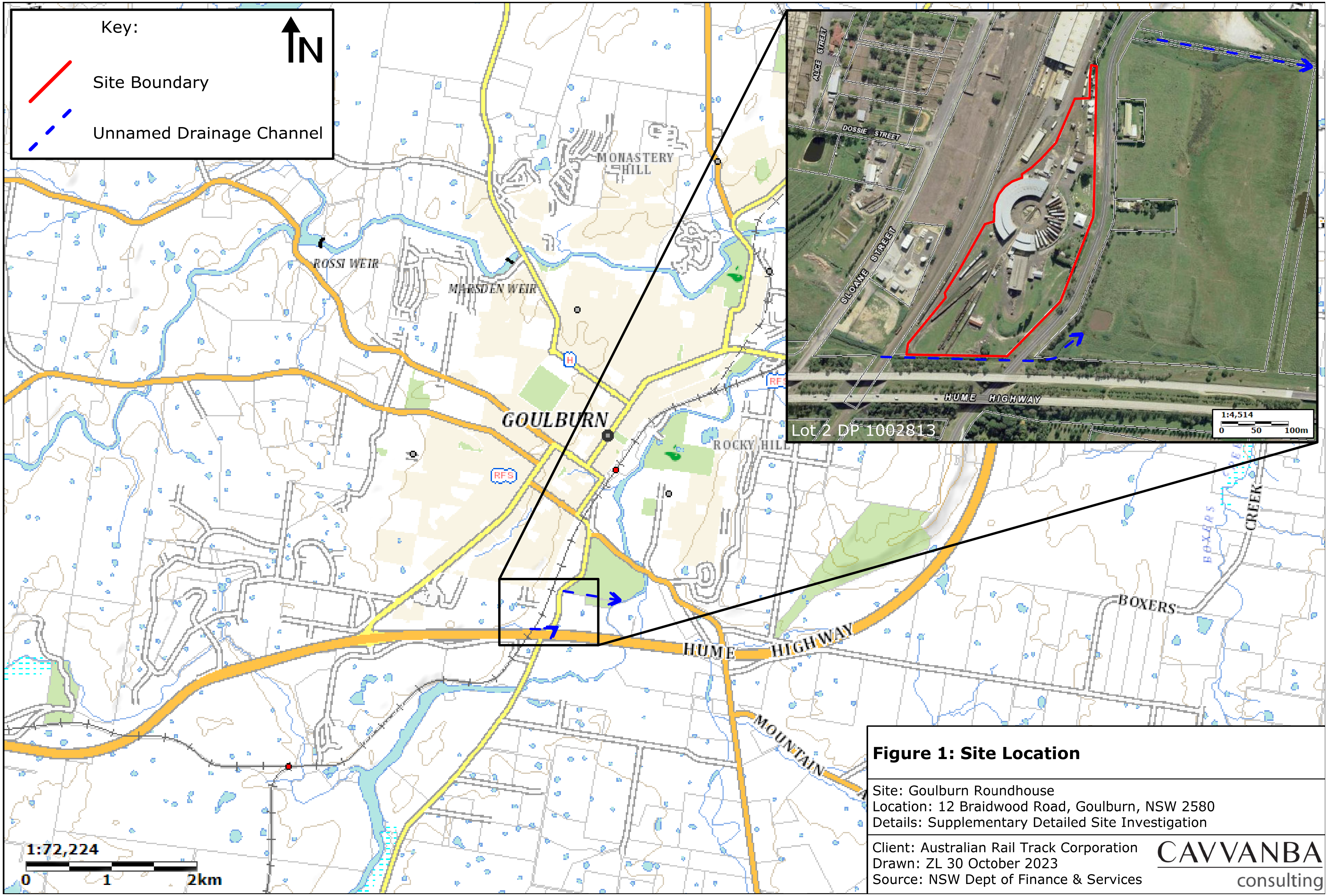

Figure 1: Site Location

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: ZL 30 October 2023
Source: NSW Dept of Finance & Services

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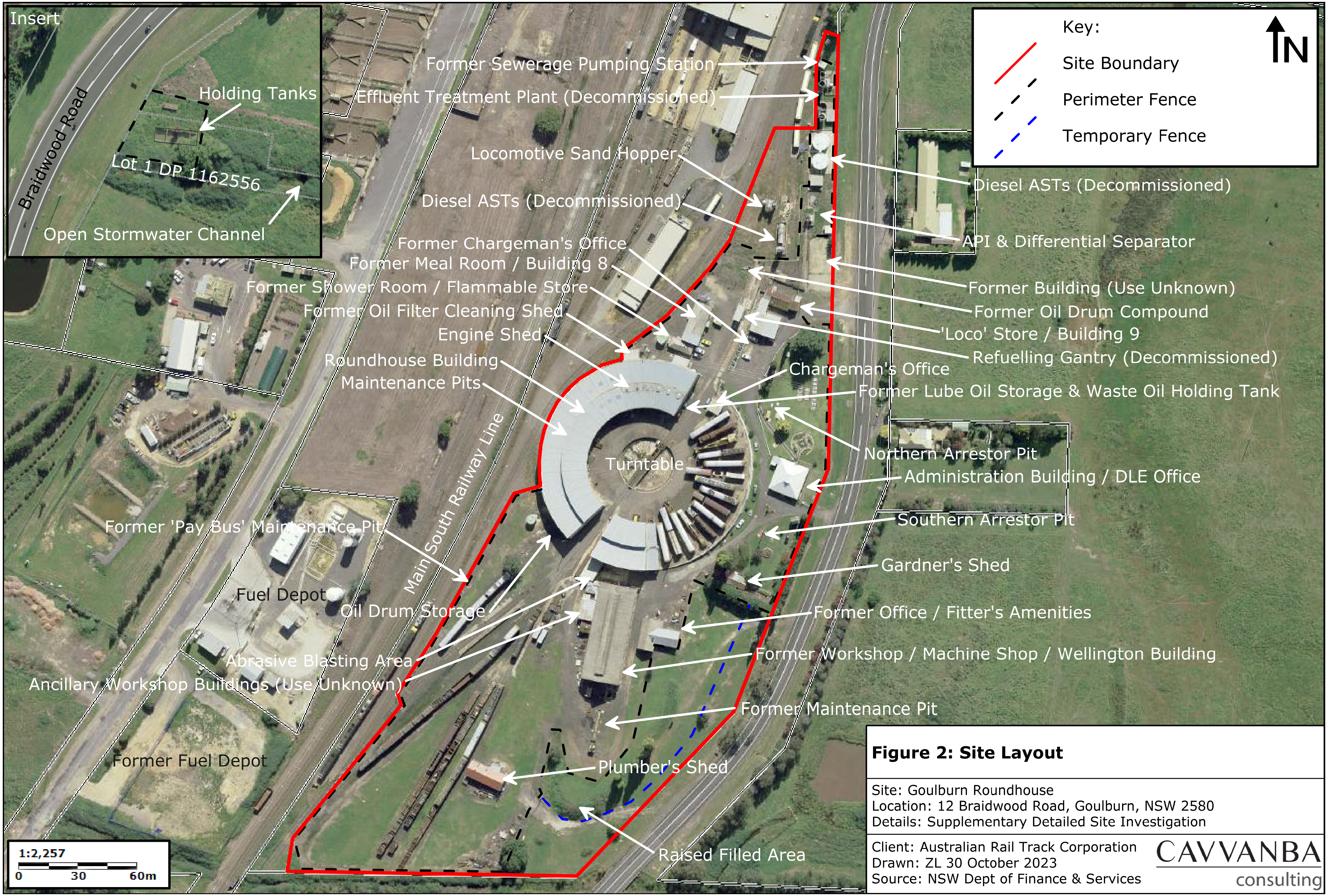
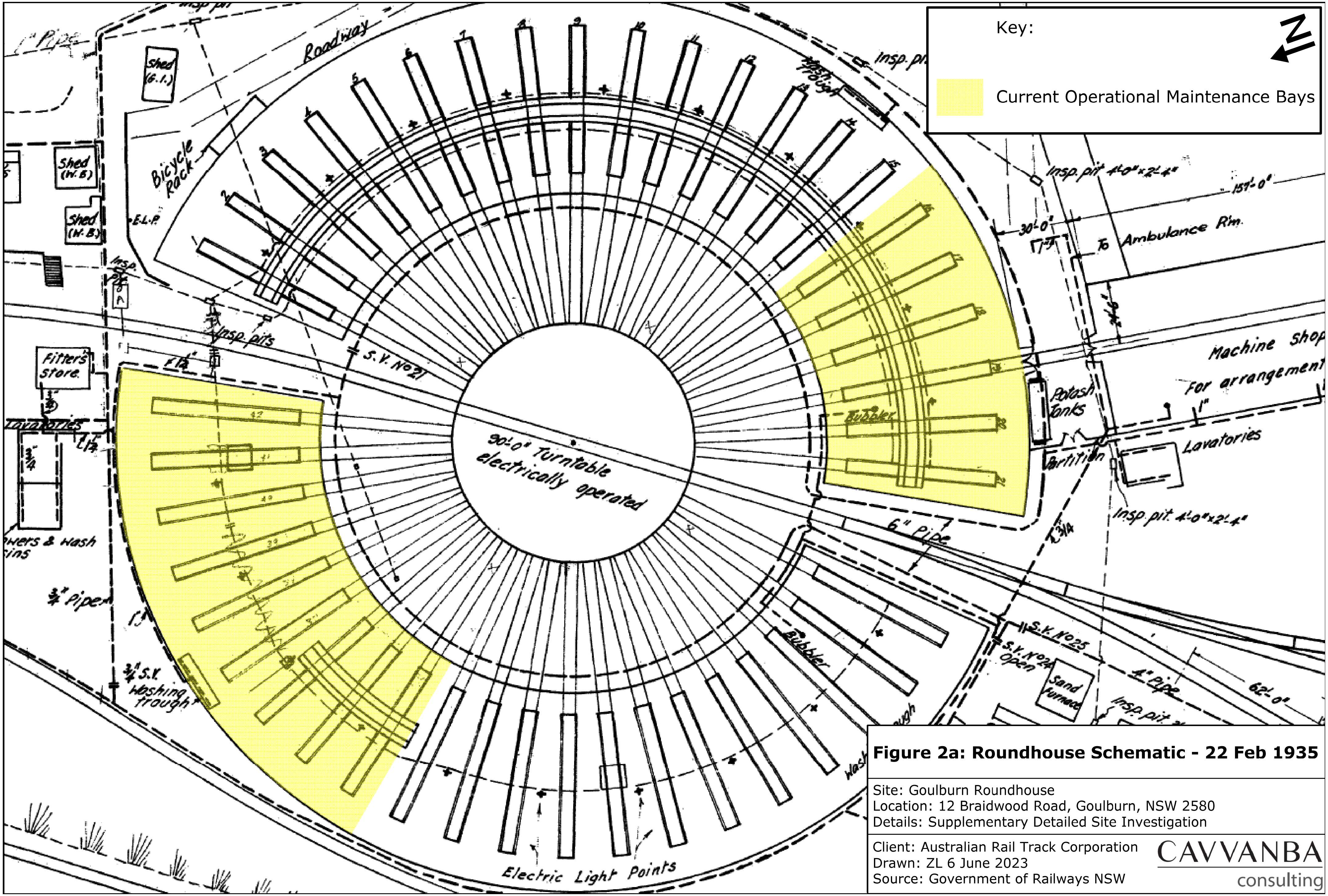


Figure 2: Site Layout

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: ZL 30 October 2023
Source: NSW Dept of Finance & Services

CAVVANBA consulting



Key:

N

🟨 Current Operational Maintenance Bays

Figure 2a: Roundhouse Schematic - 22 Feb 1935

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: ZL 6 June 2023
Source: Government of Railways NSW

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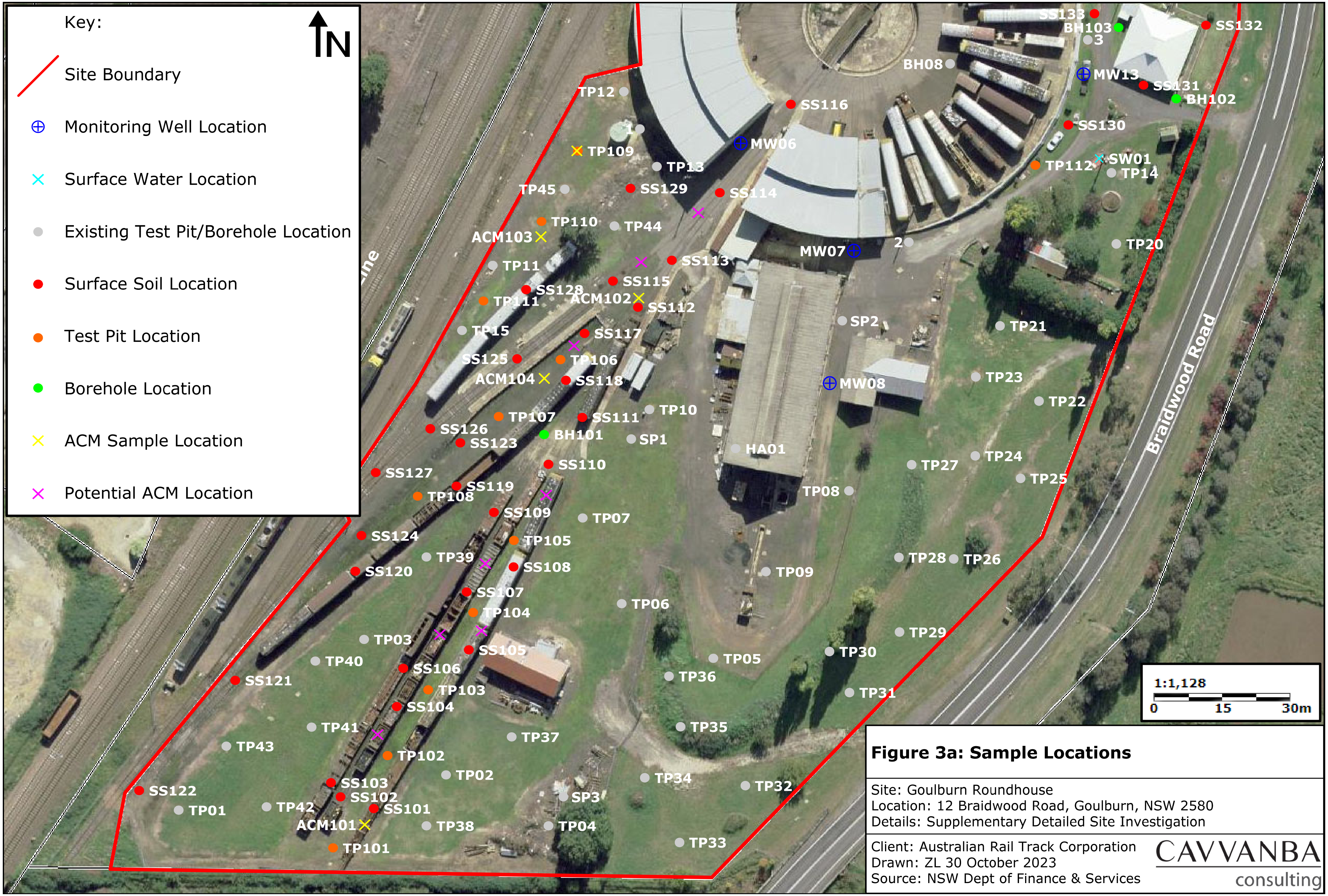

Figure 3a: Sample Locations

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: ZL 30 October 2023
Source: NSW Dept of Finance & Services

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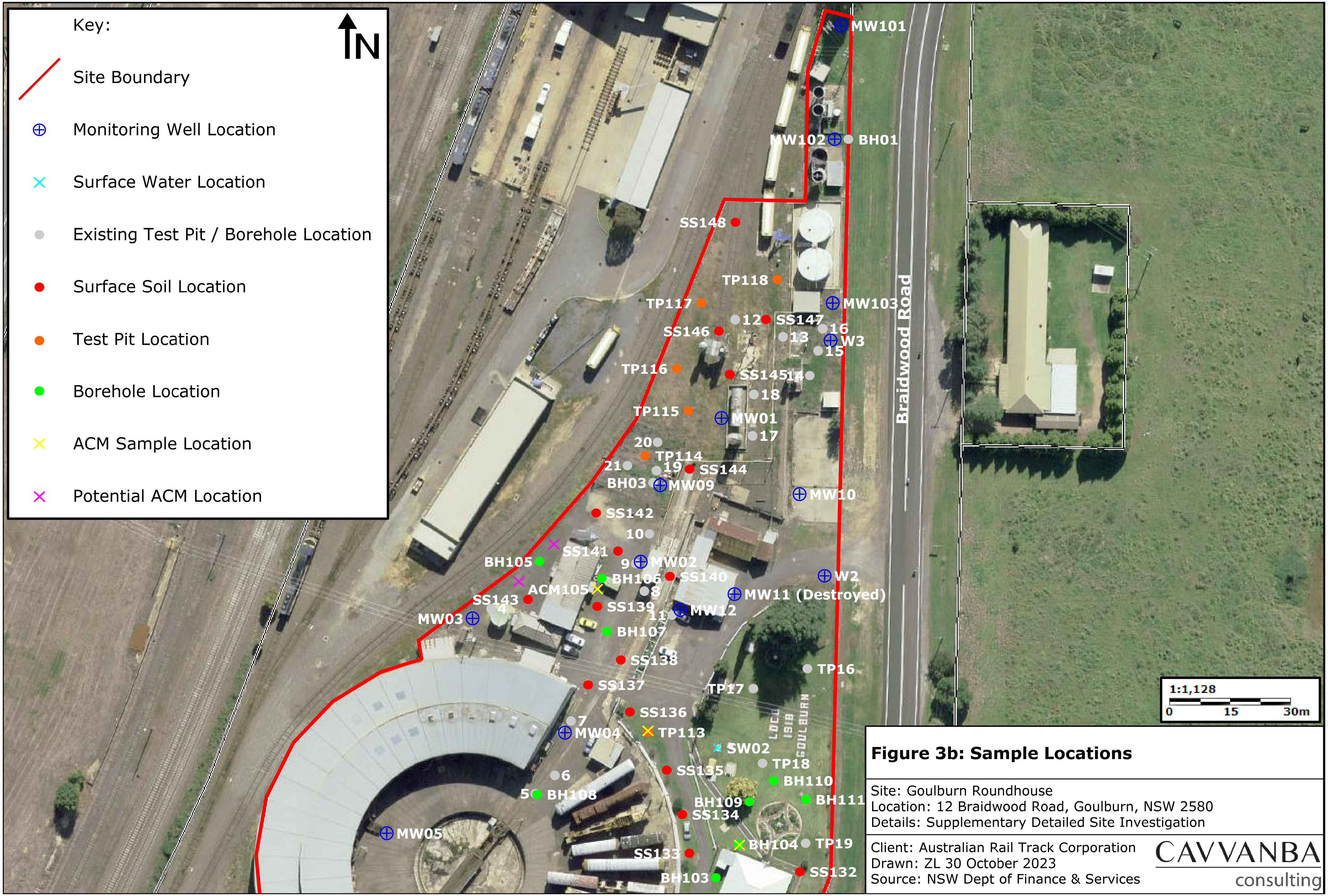

Figure 3b: Sample Locations

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: ZL 30 October 2023
Source: NSW Dept of Finance & Services

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consulting

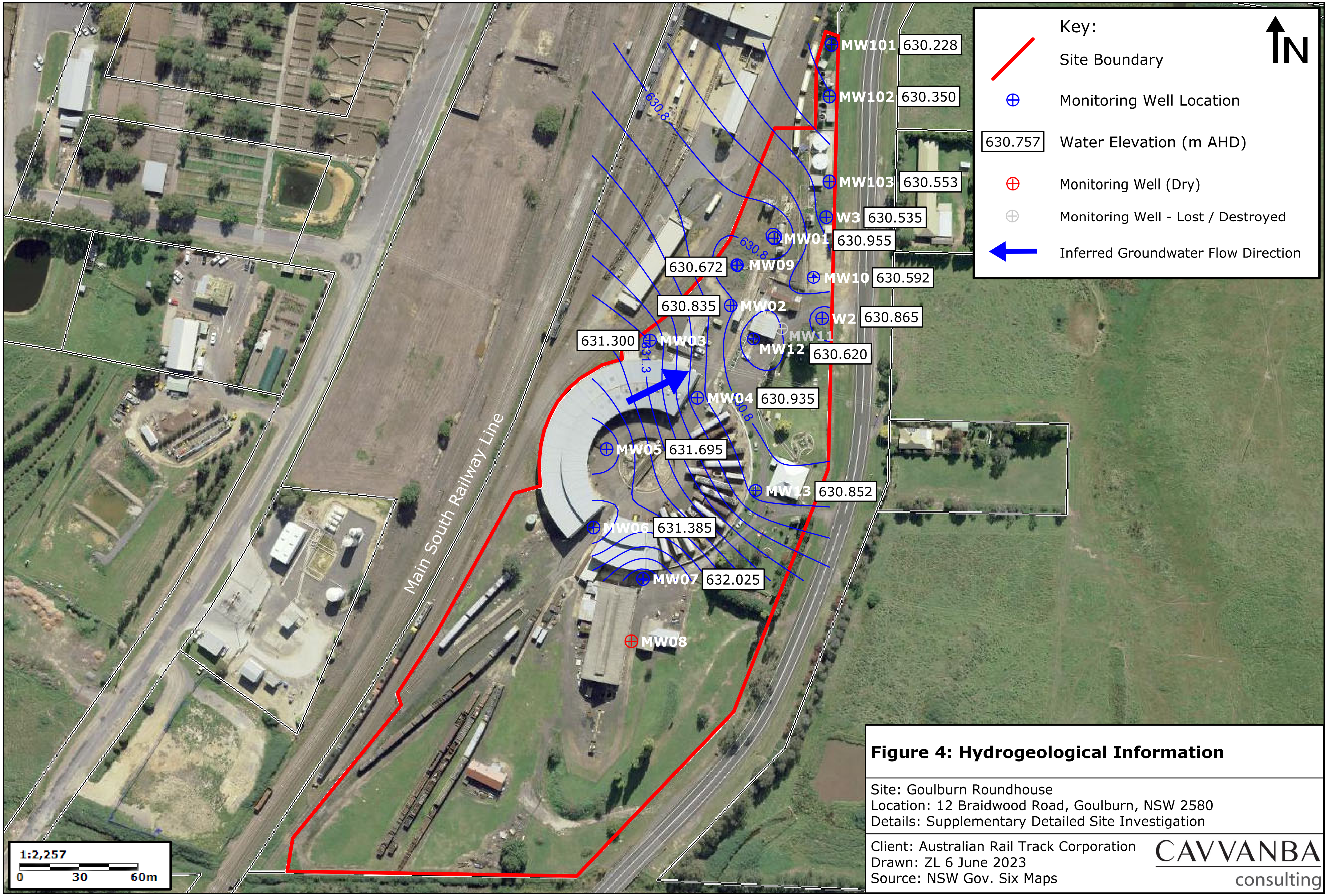

Figure 4: Hydrogeological Information

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: ZL 6 June 2023
Source: NSW Gov. Six Maps

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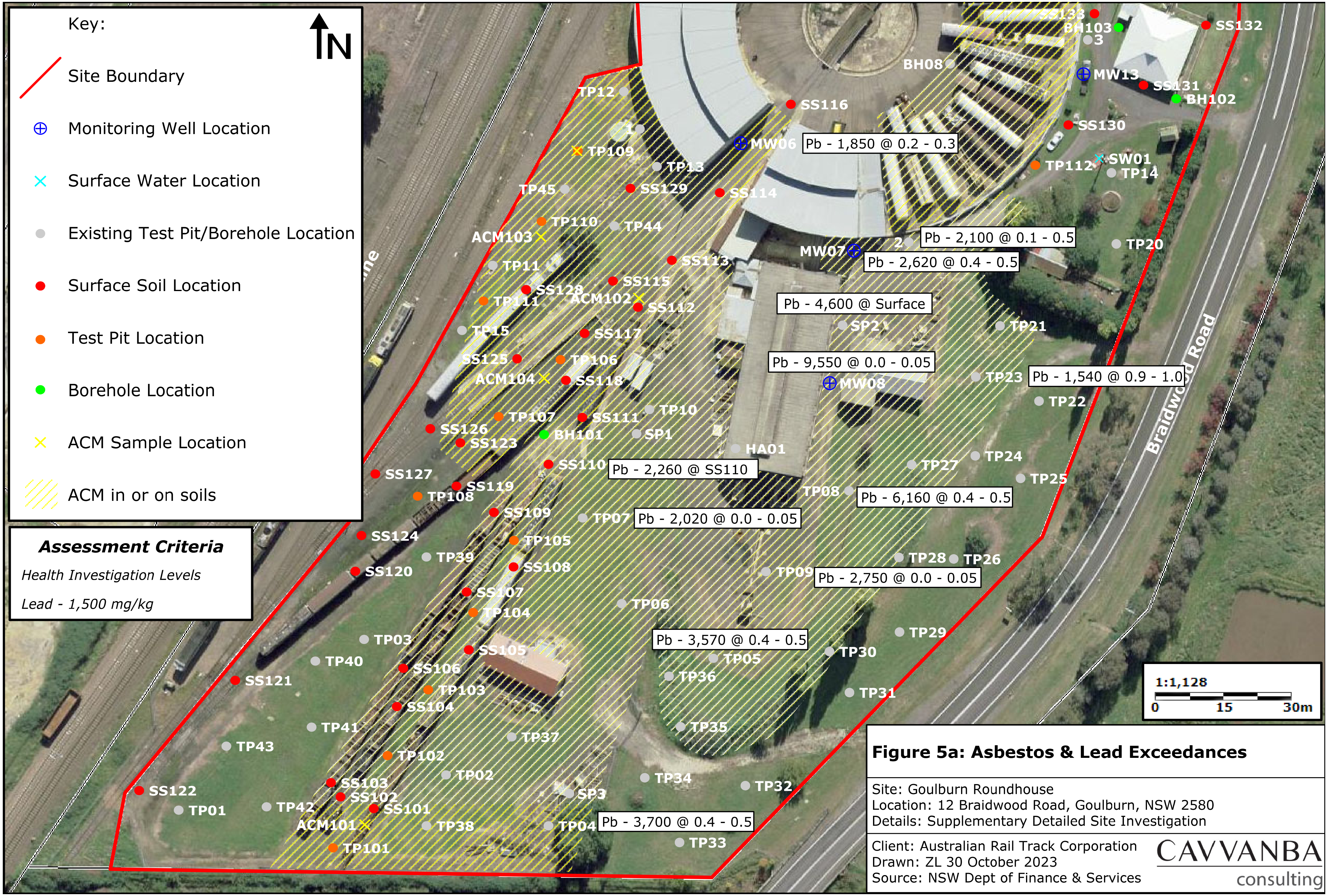


Key:

╱	Site Boundary
⊕	Monitoring Well Location
×	Surface Water Location
●	Existing Test Pit/Borehole Location
●	Surface Soil Location
●	Test Pit Location
●	Borehole Location
×	ACM Sample Location
▨	ACM in or on soils

Assessment Criteria

Health Investigation Levels

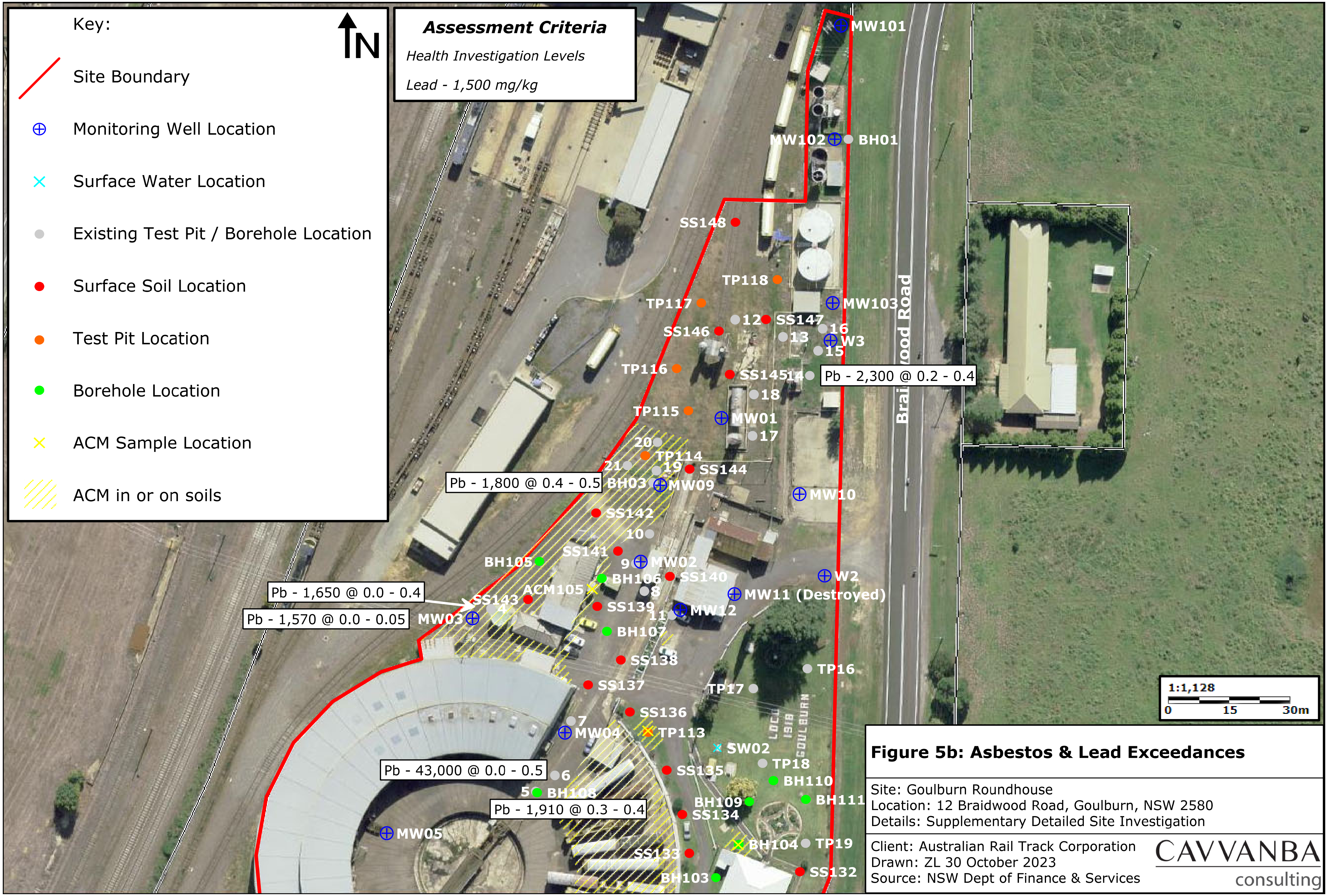
Lead - 1,500 mg/kg

Figure 5a: Asbestos & Lead Exceedances

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: ZL 30 October 2023
Source: NSW Dept of Finance & Services

CAVVANBA
consulting



Key:

- Site Boundary
- ⊕ Monitoring Well Location
- × Surface Water Location
- ● Existing Test Pit / Borehole Location
- ● Surface Soil Location
- ● Test Pit Location
- ● Borehole Location
- × ACM Sample Location
- ▨ ACM in or on soils

Assessment Criteria

Health Investigation Levels

Lead - 1,500 mg/kg

Figure 5b: Asbestos & Lead Exceedances

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: ZL 30 October 2023
Source: NSW Dept of Finance & Services

CAVVANBA
consulting

Tables

Table 1: Soil Analytical Summary - Sample Description and Analytical Summary

Sample	Depth (m)	Date sampled	Material Encountered	PID (ppm)	Description	Analysis				
						Heavy metals	BTEX	TRH	PAHs	Asbestos
Surface Samples										
SS101	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS102	0.0-0.1	18/04/2023	Fill	1.2	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS103	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS104	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS105	0.0-0.1	18/04/2023	Fill	3.5	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS106	0.0-0.1	18/04/2023	Fill	2.9	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS107	0.0-0.1	18/04/2023	Fill	2.1	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS108	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS109	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS110	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS111	0.0-0.1	18/04/2023	Fill	1.8	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS112	0.0-0.1	18/04/2023	Fill	2.7	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS113	0.0-0.1	18/04/2023	Fill	1.4	Sandy Gravel, sub-angular gravel, grey, no odour. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS114	0.0-0.1	18/04/2023	Fill	1.7	Sandy Gravel, sub-angular gravel, grey, no odour. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS115	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, grey, no odour. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS116	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, grey, dry, no odour. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS117	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, grey, dry, no odour. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS118	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, grey, dry, no odour. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS119	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, grey, dry, no odour. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS120	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, grey, dry, no odour. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS121	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS122	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS123	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS124	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS125	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS126	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS127	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	

Table 1: Soil Analytical Summary - Sample Description and Analytical Summary

Sample	Depth (m)	Date sampled	Material Encountered	PID (ppm)	Description	Analysis				
						Heavy metals	BTEX	TRH	PAHs	Asbestos
SS128	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Ash material. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS129	0.0-0.1	18/04/2023	Fill	2.1	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour. Some staining observed within areas of the siding tracks.	•	•	•	•	
SS130	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour or staining.	•	•	•	•	
SS131	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour or staining.	•	•	•	•	
SS132	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour or staining.	•	•	•	•	
SS133	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour or staining.	•	•	•	•	
SS134	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour or staining.	•	•	•	•	
SS135	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour or staining.	•	•	•	•	
SS136	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, light grey / brown, no odour or staining.	•	•	•	•	
SS137	0.0-0.1	19/04/2023	Fill	2.8	Sandy Gravel, sub-angular gravel, fine to medium grain sand, light grey / brown, no odour or staining.	•	•	•	•	
SS138	0.0-0.1	19/04/2023	Fill	1.4	Sandy Gravel, sub-angular gravel, fine to medium grain sand, light grey / brown, no odour or staining.	•	•	•	•	
SS139	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, light grey / brown, no odour or staining.	•	•	•	•	
SS140	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, light grey / brown, no odour or staining.	•	•	•	•	
SS141	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, light grey / brown, no odour or staining.	•	•	•	•	
SS142	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, light grey / brown, no odour or staining.	•	•	•	•	
SS143	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour or staining. Ash material. Fragment of non-friable ACM.	•	•	•	•	
SS144	0.0-0.1	20/04/2023	Fill	1.5	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown / grey, dry, no odour or staining. Ash material. Fragment of non-friable ACM.	•	•	•	•	
SS145	0.0-0.1	20/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown, no odour or staining.	•	•	•	•	
SS146	0.0-0.1	20/04/2023	Fill	0.0	Sandy Gravel, sub-angular gravel, fine to medium grain sand, dark brown, no odour or staining.	•	•	•	•	
SS147	0.0-0.1	20/04/2023	Fill	0.0	Silty Sand, light grey / brown, sub-angular gravels, fine to medium grain sand, no odour or staining.	•	•	•	•	
SS148	0.0-0.1	20/04/2023	Fill	0.0	Silty Sand, light grey / brown, sub-angular gravels, fine to medium grain sand, no odour or staining.	•	•	•	•	
Boreholes										
BH101	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, dark grey / light grey, loose, sub-angular gravel, fine to medium grained sand, rootlets.	•	•	•	•	
BH102	0.0-0.1	19/04/2023	Fill	0.0	Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, with sub-angular gravel, rootlets.	•	•	•	•	
BH103	0.0-0.1	19/04/2023	Fill	0.0	Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, with sub-angular gravel, rootlets.	•	•	•	•	
BH104	0.0-0.1	19/04/2023	Fill	0.0	Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, with sub-angular gravel, rootlets.	•	•	•	•	
	0.3-0.4	19/04/2023	Fill	0.0	Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand. ACM at 0.4m, glass, brick.	•	•	•	•	
BH105	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand. Glass, ash.	•	•	•	•	
BH106	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand. Glass, metal.	•	•	•	•	
BH107	0.0-0.1	20/04/2023	Fill	0.0	Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand. Ash.	•	•	•	•	
BH108	0.0-0.1	20/04/2023	Fill	0.0	Sandy Gravel, light brown / grey, loose, sub-angular gravel, fine to medium grained sand.	•	•	•	•	
	0.3-0.4	20/04/2023	Fill	0.0	Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand. Ash.	•	•	•	•	
BH109	0.0-0.1	20/04/2023	Fill	0.0	Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, rootlets.	•	•	•	•	
BH110	0.0-0.1	20/04/2023	Fill	0.0	Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, with sub-angular gravel. Metal, brick.	•	•	•	•	
BH111	0.0-0.1	20/04/2023	Fill	0.0	Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, rootlets.	•	•	•	•	

Table 1: Soil Analytical Summary - Sample Description and Analytical Summary

Sample	Depth (m)	Date sampled	Material Encountered	PID (ppm)	Description	Analysis				
						Heavy metals	BTEX	TRH	PAHs	Asbestos
Test Pits										
TP101	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand, rootlets.	•	•	•	•	
TP102	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets. Metal pins.	•	•	•	•	
TP103	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets. Tile, metal, pins.	•	•	•	•	
TP104	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets. Metal pins.	•	•	•	•	
TP105	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets.	•	•	•	•	
	0.3-0.4	18/04/2023	Fill	0.0	Sandy Gravel, dark grey, loose, sub-angular gravel, fine to medium grained sand.	•	•	•	•	
TP106	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets.	•	•	•	•	
TP107	0.0-0.1	18/04/2023	Fill	0.0	Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets. Metal.	•	•	•	•	
	0.3-0.4	18/04/2023	Fill	0.0	Light brown / dark brown, soft, low plasticity, fine to medium grained sand, homogeneous.	•	•	•	•	
TP108	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets. Glass, coal fragments.	•	•	•	•	
TP109	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, dark grey, loose, sub-angular gravel, fine to medium grained sand, rootlets. Metal pins, brick, glass.	•	•	•	•	
TP110	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets. Metal fragments.	•	•	•	•	
	0.3-0.4	19/04/2023	Fill	0.0	Sandy Gravel, dark grey, loose, sub-angular gravel, fine to medium grained sand.	•	•	•	•	
TP111	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets. Glass.	•	•	•	•	
TP112	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, dark brown / light grey, loose, sub-angular gravel, fine to medium grained sand, rootlets.	•	•	•	•	
TP113	0.0-0.1	19/04/2023	Fill	0.0	Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	•	•	•	•	
	0.4-0.5	19/04/2023	Fill	0.0	Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand. ACM present 0.4-0.5m. Ash from 0.4m.	•	•	•	•	
TP114	0.0-0.1	20/04/2023	Fill	2.5	Sandy Sand, light brown, loose, fine to medium grained sand. Timber, ballast, glass.	•	•	•	•	
TP115	0.0-0.1	20/04/2023	Fill	0.0	Sandy Gravel, brown / dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	•	•	•	•	
	0.3-0.4	20/04/2023	Fill	0.0	Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand. Ash.	•	•	•	•	
TP116	0.0-0.1	20/04/2023	Fill	0.0	Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	•	•	•	•	
TP117	0.0-0.1	20/04/2023	Fill	0.0	Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand. Slag.	•	•	•	•	
TP118	0.0-0.1	20/04/2023	Fill	0.0	Sandy Gravel, light brown, loose, sub-angular gravel, fine to medium grained sand.	•	•	•	•	

Table 1: Soil Analytical Summary - Sample Description and Analytical Summary

Sample	Depth (m)	Date sampled	Material Encountered	PID (ppm)	Description	Analysis				
						Heavy metals	BTEX	TRH	PAHs	Asbestos
Monitoring Wells										
MW103	0.2-0.3	19/04/2023	Fill	1.2	Sandy Clay, brown, soft, low plasticity, fine to medium grained sand, some sub-angular gravel, rootlets.	•	•	•	•	
Asbestos fragments										
ACM101	Surface	18/04/23	Fragment	-	One piece of asbestos cement sheeting approximately 35x30x5mm. Collected adjacent to the railway tracks within the south-eastern portion of Area E near SS101.					•
ACM102	Surface	18/04/23	Fragment	-	One piece of asbestos cement sheeting approximately 80x45x5mm. Collected within the railway tracks in the northern portion of Area E near SS112.					•
ACM103	Surface	19/04/23	Fragment	-	One piece of asbestos cement sheeting approximately 45x35x5mm. Collected on the surface within the central portion of Area B near TP110.					•
ACM104	Surface	19/04/23	Fragment	-	One piece of asbestos cement sheeting approximately 60x40x5mm. Collected on the surface within the western portion of Area E near TP106.					•
ACM105	Surface	20/04/23	Fragment	-	One piece of asbestos cement sheeting approximately 35x30x5mm. Collected on the surface within the northern portion of site near SS139 and the former meal room.					•
TP109	0.0-0.1	18/04/23	Fragment	-	One piece of asbestos cement sheeting approximately 40x35x5mm. Collected within the surface fill material after sieving had been completed.					•
TP113	0.4-0.5	19/04/23	Fragment	-	Several pieces of asbestos cement sheeting approximately 85x60x5mm. Collected within the deeper ash fill material at TP113.					•
BH104	0.3-0.4	19/04/23	Fragment	-	One piece of asbestos cement sheeting approximately 85x75x5mm. Collected within the deeper ash fill material at BH104.					•

Table 2: Soil Analytical Summary - Heavy Metals (mg/kg)

Sample	Depth (m)	Material Encountered	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
	LOR		*5*	*1*	*2*	*5*	*5*	*2*	*5*	*0.1*
Analytical - Surface Samples										
SS101	0.0-0.1	Fill	34	6	66	273	623	54	664	nd
SS102	0.0-0.1	Fill	27	nd	27	143	222	16	249	nd
SS103	0.0-0.1	Fill	29	nd	31	117	250	14	202	nd
SS104	0.0-0.1	Fill	144	5	46	427	1,130	45	866	nd
SS105	0.0-0.1	Fill	26	8	54	488	1,130	35	836	nd
SS106	0.0-0.1	Fill	63	15	130	288	537	51	672	0.1
SS107	0.0-0.1	Fill	61	nd	22	735	475	18	419	nd
SS108	0.0-0.1	Fill	11	2	25	205	266	14	200	nd
SS109	0.0-0.1	Fill	11	2	71	209	322	19	417	nd
SS110	0.0-0.1	Fill	20	3	45	1,980	**2,260**	45	883	nd
SS111	0.0-0.1	Fill	18	2	39	158	498	24	552	nd
SS112	0.0-0.1	Fill	163	20	206	2,280	640	77	2,520	nd
SS113	0.0-0.1	Fill	80	7	103	855	302	52	989	nd
SS114	0.0-0.1	Fill	29	1	52	394	523	19	761	nd
SS115	0.0-0.1	Fill	97	3	75	777	294	24	822	nd
SS116	0.0-0.1	Fill	8	nd	34	231	234	13	431	nd
SS117	0.0-0.1	Fill	22	2	86	253	457	41	790	nd
SS118	0.0-0.1	Fill	7	nd	10	36	102	6	136	nd
SS119	0.0-0.1	Fill	29	3	44	196	902	32	658	nd
SS120	0.0-0.1	Fill	17	1	24	172	650	19	407	nd
SS121	0.0-0.1	Fill	59	1	18	176	324	17	337	nd
SS122	0.0-0.1	Fill	24	nd	23	115	226	14	356	nd
SS123	0.0-0.1	Fill	14	nd	16	220	274	20	200	nd
SS124	0.0-0.1	Fill	26	3	22	170	344	29	470	nd
SS125	0.0-0.1	Fill	7	nd	28	126	142	10	135	nd
SS126	0.0-0.1	Fill	6	nd	42	123	243	64	272	nd
SS127	0.0-0.1	Fill	nd	nd	29	138	76	49	219	nd
SS128	0.0-0.1	Fill	10	nd	43	97	112	72	206	nd
SS129	0.0-0.1	Fill	13	nd	71	182	551	24	606	nd
SS130	0.0-0.1	Fill	6	nd	18	231	443	12	225	nd
SS131	0.0-0.1	Fill	13	nd	55	428	779	14	216	nd
SS132	0.0-0.1	Fill	5	nd	16	111	216	8	149	nd
SS133	0.0-0.1	Fill	6	nd	31	150	436	9	354	nd
SS134	0.0-0.1	Fill	6	nd	16	210	710	9	449	0.1
SS135	0.0-0.1	Fill	nd	nd	18	165	539	8	192	nd
SS136	0.0-0.1	Fill	7	nd	21	210	352	14	236	nd
SS137	0.0-0.1	Fill	nd	nd	10	12	15	6	52	nd
SS138	0.0-0.1	Fill	nd	nd	20	15	23	7	52	nd
SS139	0.0-0.1	Fill	nd	nd	7	94	90	7	179	nd
SS140	0.0-0.1	Fill	nd	nd	16	68	54	38	128	nd
SS141	0.0-0.1	Fill	nd	nd	16	156	197	13	478	nd
SS142	0.0-0.1	Fill	nd	nd	14	65	121	5	154	nd
SS143	0.0-0.1	Fill	9	2	33	472	1,310	20	746	0.1
SS144	0.0-0.1	Fill	7	nd	35	135	163	19	216	nd
SS145	0.0-0.1	Fill	5	nd	13	153	98	12	205	nd
SS146	0.0-0.1	Fill	10	nd	22	87	57	12	99	nd
SS147	0.0-0.1	Fill	nd	nd	15	136	182	10	863	nd
SS148	0.0-0.1	Fill	nd	nd	5	238	33	8	96	nd
Analytical - Boreholes										
BH101	0.0-0.1	Fill	9	nd	13	60	153	7	178	nd
BH102	0.0-0.1	Fill	7	nd	25	324	916	14	400	0.1
BH103	0.0-0.1	Fill	8	nd	19	247	601	8	238	0.2
BH104	0.0-0.1	Fill	5	nd	17	127	204	7	163	nd
	0.3-0.4	Fill	8	nd	12	626	1,020	11	140	nd
BH105	0.0-0.1	Fill	10	1	45	418	1,140	11	597	0.1
BH106	0.0-0.1	Fill	nd	nd	12	328	592	11	324	0.2
BH107	0.0-0.1	Fill	nd	nd	11	136	98	8	186	nd
BH108	0.0-0.1	Fill	nd	nd	21	21	28	8	41	nd
	0.3-0.4	Fill	6	nd	5	602	**1,910**	10	49	0.2
BH109	0.0-0.1	Fill	5	nd	46	141	220	7	174	nd
BH110	0.0-0.1	Fill	nd	nd	12	41	128	4	130	nd
BH111	0.0-0.1	Fill	11	nd	18	203	431	11	296	nd

Table 2: Soil Analytical Summary - Heavy Metals (mg/kg)

Sample	Depth (m)	Material Encountered	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
LOR			*5*	*1*	*2*	*5*	*5*	*2*	*5*	*0.1*
Analytical - Test Pits										
TP101	0.0-0.1	Fill	19	nd	24	63	143	9	167	nd
TP102	0.0-0.1	Fill	18	7	36	206	669	26	248	nd
TP103	0.0-0.1	Fill	20	nd	16	169	381	11	299	0.1
TP104	0.0-0.1	Fill	282	nd	284	472	427	36	245	nd
TP105	0.0-0.1	Fill	19	nd	13	125	290	14	208	nd
	0.3-0.4	Fill	13	nd	8	238	356	9	58	nd
TP106	0.0-0.1	Fill	19	nd	32	224	297	23	314	nd
TP107	0.0-0.1	Fill	20	nd	14	221	249	30	190	nd
	0.3-0.4	Fill	8	nd	66	43	64	17	142	nd
TP108	0.0-0.1	Fill	20	1	43	229	392	37	298	nd
TP109	0.0-0.1	Fill	15	nd	13	188	331	14	416	nd
TP110	0.0-0.1	Fill	10	nd	12	133	86	10	151	nd
	0.3-0.4	Fill	27	nd	6	194	47	15	70	nd
TP111	0.0-0.1	Fill	17	nd	29	189	217	23	349	nd
TP112	0.0-0.1	Fill	8	nd	38	630	530	24	394	0.1
TP113	0.0-0.1	Fill	9	nd	15	310	823	12	184	nd
	0.4-0.5	Fill	10	nd	14	409	1,200	15	298	nd
TP114	0.0-0.1	Fill	112	nd	9	68	209	5	262	nd
TP115	0.0-0.1	Fill	12	nd	20	213	396	18	423	nd
	0.3-0.4	Fill	nd	nd	nd	6	38	3	31	nd
TP116	0.0-0.1	Fill	11	nd	25	168	108	19	141	nd
TP117	0.0-0.1	Fill	nd	nd	30	132	132	14	363	nd
TP118	0.0-0.1	Fill	nd	nd	16	428	257	13	1,290	nd
Analytical - Monitoring Wells										
MW103	0.2-0.3	Fill	10	nd	45	109	111	24	819	nd
Statistics										
Samples analysed			85	85	85	85	85	85	85	85
Detects			68	21	84	85	85	85	85	10
% detect			80%	25%	99%	100%	100%	100%	100%	12%
Maximum			282	20	284	2,280	**2,260**	77	2,520	0.2
Mean			28	5	35	272	413	20	372	0.1
Median			13	3	23	188	294	14	249	0.1
Minimum			<5	<1	<2	6	15	<2	31	<0.1
Criteria										
HILs - Commercial / Industrial D			3,000	900	3,600	240,000	**1,500**	6,000	400,000	730/180
EILs - Commercial and Industrial (Aged)			160	-	680	310	1,800	290	750	-

Table 3: Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH $>C_{10}$ - C_{16}	F3 TRH $>C_{16}$ - C_{34}	F4 TRH $>C_{34}$ - C_{40}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*
Analytical - Surface Samples												
SS101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	840	260
SS102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd
SS103	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	310	150
SS104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	520	260
SS105	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	70	*5,540*	1,820
SS106	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	120	*3,530*	1,650
SS107	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	880	500
SS108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	510	220
SS109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	160	1,130	290
SS110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	200	nd
SS111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	120	1,170	370
SS112	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	450	220
SS113	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	390	190
SS114	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	460	180
SS115	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	50	1,460	640
SS116	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	340	160
SS117	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	80	1,070	350
SS118	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	130	nd
SS119	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	50	790	300
SS120	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	380	150
SS121	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	480	260
SS122	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS123	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	180	nd
SS124	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	520	190
SS125	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	2,260	1,740
SS126	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	170	nd
SS127	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	160
SS128	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	nd
SS129	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	400	220

Table 3: Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH >C_{10} - C_{16}	F3 TRH >C_{16} - C_{34}	F4 TRH >C_{34} - C_{40}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*
SS130	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	370	210
SS131	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd
SS132	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS133	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	250	160
SS134	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	130	nd
SS135	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	100	nd
SS136	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	250	100
SS137	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS138	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	nd
SS139	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS140	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	210	170
SS141	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS142	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS143	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd
SS144	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	690	400
SS145	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS146	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd
SS147	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	160	nd
SS148	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Analytical - Boreholes												
BH101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	130	150
BH102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	nd
BH103	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	240	150
BH104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd
BH105	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	170	nd
BH106	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH107	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table 3: Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH >C_{10} - C_{16}	F3 TRH >C_{16} - C_{34}	F4 TRH >C_{34} - C_{40}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*
BH109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd
Analytical - Test Pits												
TP101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd
TP103	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	350	110
TP104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd
TP105	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	460	170
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	180	nd
TP106	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	420	160
TP107	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	400	130
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	100	nd
TP108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	580	230
TP109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd
TP110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP112	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd
TP113	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	nd
	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	220	nd
TP114	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	1,020	590
TP115	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	60	520	160
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	110	900	190
TP116	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	170	nd
TP117	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd
TP118	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table 3: Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH >C_{10} - C_{16}	F3 TRH >C_{16} - C_{34}	F4 TRH >C_{34} - C_{40}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*
Analytical - Monitoring Wells												
MW103	0.2-0.3	Fill	nd	nd	nd	nd	nd	nd	nd	250	470	nd
Statistics												
Samples analysed			85	85	85	85	85	85	85	85	85	85
Detects			0	0	0	0	0	0	0	10	65	37
% detect			0%	0%	0%	0%	0%	0%	0%	12%	76%	44%
Maximum			<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<10	250	*5,540*	1,820
Mean			<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<50	372	233
Median			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10	95	250	210
Minimum			<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<50	<100	<100
Criteria - Commercial / Industrial (Sand)												
HSL D - 0 m to < 1 m			3	NL	NL	230		NL	260	NL	NL	NL
HILs - Commercial / Industrial D			-	-	-	-		-	-	-	-	-
Ecological - Commercial / Industrial (Aged)			75	135	165	180		370	215	170	1,700	3,300
Management Limits - Commercial and Industrial			-	-	-	-		-	700	1,000	*3,500*	10,000
HSL D - Direct Contact			430	99,000	27,000	81,000		-	26,000	20,000	27,000	38,000
Intrusive Maintenance Worker - Direct Contact			1,100	120,000	85,000	130,000		29,000	82,000	62,000	85,000	120,000
Intrusive Maintenance Worker - Shallow Trench - 0 m to < 2 m			350	NL	NL	NL		NL	NL	NL	NL	NL

Table 4: Soil Analytical Summary - PAHs (mg/kg)

Sample	Depth (m)	Material Encountered	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Total PAHs	B(a)P TEQ
LORs			*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
Analytical - Surface Samples																				
SS101	0.0-0.1	Fill	nd	nd	nd	nd	0.8	nd	nd	nd	nd	0.5	nd	nd	nd	nd	nd	nd	1.3	nd
SS102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS103	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS104	0.0-0.1	Fill	nd	nd	nd	nd	1	nd	0.6	0.6	nd	nd	nd	nd	nd	nd	nd	nd	2.2	nd
SS105	0.0-0.1	Fill	nd	nd	nd	nd	0.8	nd	0.7	0.7	nd	nd	nd	nd	nd	nd	nd	nd	2.2	nd
SS106	0.0-0.1	Fill	nd	nd	nd	nd	2.4	nd	2.2	1.8	0.5	0.6	0.5	nd	nd	nd	nd	nd	8	nd
SS107	0.0-0.1	Fill	nd	nd	nd	nd	1.1	nd	1.7	1.4	1	1.1	2.7	0.7	nd	0.7	nd	0.6	11	0.5
SS108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS109	0.0-0.1	Fill	1	nd	nd	nd	2.9	nd	0.9	0.8	nd	nd	nd	nd	nd	nd	nd	nd	5.6	nd
SS110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS111	0.0-0.1	Fill	0.9	0.8	nd	nd	3.1	nd	2.4	2.3	1.2	1.6	1.7	0.5	0.8	nd	nd	nd	15.3	1.2
SS112	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS113	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS114	0.0-0.1	Fill	nd	nd	nd	nd	0.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.7	nd
SS115	0.0-0.1	Fill	nd	nd	nd	nd	0.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.8	nd
SS116	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS117	0.0-0.1	Fill	nd	nd	nd	nd	3	nd	1.4	1.1	0.6	0.8	0.8	nd	nd	nd	nd	nd	7.7	nd
SS118	0.0-0.1	Fill	nd	nd	nd	nd	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	nd
SS119	0.0-0.1	Fill	nd	nd	nd	nd	1.8	nd	1.1	1.1	0.5	0.9	0.9	nd	nd	nd	nd	nd	6.3	nd
SS120	0.0-0.1	Fill	nd	nd	nd	nd	1	nd	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.5	nd
SS121	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS122	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS123	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS124	0.0-0.1	Fill	nd	nd	nd	nd	0.9	nd	0.8	0.8	nd	0.6	0.6	nd	nd	nd	nd	nd	3.7	nd
SS125	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS126	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS127	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS128	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS129	0.0-0.1	Fill	nd	nd	nd	nd	0.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.9	nd
SS130	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS131	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table 4: Soil Analytical Summary - PAHs (mg/kg)

Sample	Depth (m)	Material Encountered	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Total PAHs	B(a)P TEQ
LORs			*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
SS132	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS133	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS134	0.0-0.1	Fill	nd	nd	nd	nd	0.9	nd	1.3	1.2	nd	0.6	0.5	nd	nd	nd	nd	nd	4.5	nd
SS135	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS136	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	1	1.1	nd	0.6	0.7	nd	nd	nd	nd	nd	3.4	nd
SS137	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS138	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS139	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS140	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS141	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS142	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS143	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS144	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS145	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS146	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS147	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS148	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Analytical - Boreholes																				
BH101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH103	0.0-0.1	Fill	nd	0.8	nd	nd	0.9	nd	1	1.6	0.8	1	1.1	nd	1	0.6	nd	1	9.8	1.3
BH104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH105	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH106	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH107	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table 4: Soil Analytical Summary - PAHs (mg/kg)

Sample	Depth (m)	Material Encountered	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Total PAHs	B(a)P TEQ
LORs			*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
Analytical - Test Pits																				
TP101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP103	0.0-0.1	Fill	nd	nd	nd	nd	1.5	nd	1.2	1.3	0.6	0.8	0.7	nd	nd	nd	nd	nd	6.1	nd
TP104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP105	0.0-0.1	Fill	nd	nd	nd	nd	1	nd	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.5	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP106	0.0-0.1	Fill	nd	nd	nd	nd	1.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.1	nd
TP107	0.0-0.1	Fill	nd	nd	nd	nd	1.1	nd	0.6	nd	nd	nd	0.5	nd	nd	nd	nd	nd	2.2	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP108	0.0-0.1	Fill	nd	nd	nd	nd	1.2	nd	1.2	1	nd	0.5	0.6	nd	nd	nd	nd	nd	4.5	nd
TP109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP112	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP113	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	0.8	0.8	nd	0.6	0.7	nd	nd	nd	nd	nd	2.9	nd
TP114	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table 4: Soil Analytical Summary - PAHs (mg/kg)

Sample	Depth (m)	Material Encountered	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Total PAHs	B(a)P TEQ
LORs			*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*
TP115	0.0-0.1	Fill	0.7	nd	nd	nd	0.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.5	nd
	0.3-0.4	Fill	0.7	nd	nd	nd	0.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.6	nd
TP116	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP117	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP118	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Analytical - Monitoring Wells																				
MW103	0.2-0.3	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Statistics																				
Samples analysed			85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85
Detects			4	2	0	0	24	0	18	15	7	13	13	2	2	2	0	2	26	3
% detect			5%	2%	0%	0%	28%	0%	21%	18%	8%	15%	15%	2%	2%	2%	0%	2%	31%	4%
Maximum			1	0.8	<0.5	<0.5	3.1	<0.5	2.4	2.3	1.2	1.6	2.7	0.7	1	0.7	<0.5	1	15.3	1.3
Mean			0.83	0.80	<0.5	<0.5	1.30	<0.5	1.11	1.17	0.74	0.78	0.92	0.60	0.90	0.65	<0.5	0.80	4.11	1.00
Median			0.8	0.8	<0.5	<0.5	1	<0.5	1	1.1	0.6	0.6	0.7	0.6	0.9	0.65	<0.5	0.8	2.55	1.2
Minimum			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Criteria																				
HILs - Commercial / Industrial D			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,000	40
EILs - Commercial / Industrial (Aged)			370	-	-	-	-	-	-	-	-	-	-	-	1.4	-	-	-	-	-

Table 5: Asbestos Analytical Summary

Sample	Date	Field observations	Asbestos detected in laboratory sample?	Asbestos Type Laboratory result	Classification - AF or ACM Based on laboratory & field assessment
ACM101	18/04/2023	One piece of asbestos cement sheeting approximately 35x30x5mm. Collected adjacent to the railway tracks within the south-eastern portion of Area E near SS101.	Yes	Ch + Am	ACM
ACM102	18/04/2023	One piece of asbestos cement sheeting approximately 80x45x5mm. Collected wihtin the railway tracks in the northern portion of Area E near SS112.	Yes	Ch	ACM
ACM103	19/04/2023	One piece of asbestos cement sheeting approximately 45x35x5mm. Collected on the surface within the central portion of Area B near TP110.	Yes	Ch	ACM
ACM104	19/04/2023	One piece of asbestos cement sheeting approximately 60x40x5mm. Collected on the surface within the western portion of Area E near TP106.	Yes	Ch	ACM
ACM105	20/04/2023	One piece of asbestos cement sheeting approximately 35x30x5mm. Collected on the surface near SS139 and adjacent to the former meal room within the northern portion of site.	Yes	Ch + Am	ACM
TP109_0-0.1	18/04/2023	One piece of asbestos cement sheeting approximately 40x35x5mm. Collected within the surface fill material after seiving had been completed.	Yes	Ch	ACM
TP113_0.4-0.5	19/04/2023	Several pieces of asbestos cement sheeting approximately 85x60x5mm. Collected within the deeper ash fill material at TP113.	Yes	Ch + Am	ACM
BH104_0.3-0.4	19/04/2023	One piece of asbestos cement sheeting approximately 85x75x5mm. Collected within the deeper ash fill material at BH104.	Yes	Ch	ACM

Table 6: Soil Analytical Summary - Quality Control (mg/kg)

Analyte	Primary Laboratory LOR mg/kg	Secondary Laboratory LOR mg/kg	SS104	QS101	**RPD**	QS102	**RPD**	SS115	QS103	**RPD**	QS104	**RPD**	BH105_0.0-0.1	QS105	**RPD**	QS106	**RPD**	SS147	QS107	**RPD**	QS108	**RPD**
Type	-		*Primary*	*Intralab Duplicate*	%	*Interlab Duplicate*	%	*Primary*	*Intralab Duplicate*	%	*Interlab Duplicate*	%	*Primary*	*Intralab Duplicate*	%	*Interlab Duplicate*	%	*Primary*	*Intralab Duplicate*	%	*Interlab Duplicate*	%
Date	-		*18/04/23*	*18/04/23*		*23/04/23*		*18/04/23*	*18/04/23*		*23/04/23*		*19/04/23*	*19/04/23*		*23/04/23*		*20/04/23*	*20/04/23*		*23/04/23*	
Media	*Soil*		*Soil*	*Soil*	-	*Soil*	-	*Soil*	*Soil*	-	*Soil*	-	*Soil*	*Soil*	-	*Soil*	-	*Soil*	*Soil*	-	*Soil*	-
Heavy metals																						
Arsenic	*5*	*2*	144	139	4	120	20	97	142	38	100	3	10	10	0	14	29	nd	6	-	5.7	-
Cadmium	*1*	*0.4*	5	4	22	3.1	**61**	3	4	29	3	0	1	1	0	1.3	23	nd	nd	-	0.5	-
Chromium	*2*	*5*	46	40	14	52	12	75	93	21	76	1	11	10	10	45	**76**	15	21	33	18	17
Copper	*5*	*5*	427	414	3	440	3	777	947	20	940	17	418	484	15	480	13	136	172	23	160	15
Lead	*5*	*5*	1130	1220	8	1,300	13	294	370	23	240	23	1,140	918	22	940	21	182	155	16	140	30
Nickel	*2*	*5*	45	35	25	44	2	24	38	45	34	29	11	13	17	14	21	10	16	46	11	9
Zinc	*5*	*5*	866	949	9	770	12	822	1,200	37	890	8	597	508	16	450	33	863	620	33	490	**76**
Mercury	*0.1*	*0.1*	nd	0.2	-	0.1	-	nd	nd	-	nd	-	0.1	0.1	0	0.1	0	nd	nd	-	nd	-
Organics																						
Benzene	*0.2*	*0.1*	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-
Toluene	*0.5*	*0.1*	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-
Ethyl benzene	*0.5*	*0.1*	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-
meta- & para-Xylene	*0.5*	*0.2*	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-
ortho-Xylene	*0.5*	*0.1*	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-
F1 TRH C_6 - C_{10}	*10*	*20*	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-	nd	nd	-	nd	-
F2 TRH $>C_{10}$ - C_{16}	*50*	*50*	nd	nd	-	nd	-	nd	nd	-	61	-	nd	nd	-	nd	-	nd	nd	-	nd	-
F3 TRH $>C_{16}$ - C_{34}	*100*	*100*	520	320	48	440	18	1,460	820	**56**	1,100	33	170	120	34	300	43	160	230	36	400	**60**
F4 TRH $>C_{34}$ - C_{40}	*100*	*100*	260	170	42	290	10	640	420	42	710	10	nd	nd	**-**	180	**-**	nd	nd	**-**	280	**-**
Sum PAHs	*0.5*	*0.5*	2.2	2	10	1.1	**100**	640	nd	**-**		-	nd	nd	**-**	nd	**-**	nd	1.8	**-**	nd	-
Data Quality Indicator			-	-	*<50%*	**-**	***<50%***	-	-	***<50%***	**-**	*<50%*	-	-	*<50%*	**-**	***<50%***	-	-	*<50%*	**-**	***<50%***

Table 7: Soil Analytical Summary - Quality Control (mg/kg)

Analyte	Primary Laboratory LOR mg/kg	Secondary Laboratory LOR mg/kg	TP117_0.0-0.1	QS109	**RPD**	QS110	**RPD**	BH109_0.0-0.1	QS111	**RPD**	QS112	**RPD**	RB1	RB2	RB3	Trip Blank	Trip Spike	Trip Spike Control	Trip Spike
Type	-		*Primary*	*Intralab Duplicate*	%	*Interlab Duplicate*	%	*Primary*	*Intralab Duplicate*	%	*Interlab Duplicate*	%	*Rinsate Samples*			*Lab prep*	*Field*	*Lab*	*Recovery*
Date	-		*20/04/23*	*20/04/23*		*20/04/23*		*20/04/23*	*20/04/23*		*23/04/23*		*18/04/23*	*19/04/23*	*20/04/23*	*17/04/23*	*11/04/23*	*11/04/23*	-
Media	*Soil*		*Soil*	*Soil*	-	*Soil*	-	*Soil*	*Soil*	-	*Soil*	-	*Water*	*Water*	*Water*	*Soil*	*Soil*	*Soil*	
Heavy metals																			
Arsenic	*5*	*2*	nd	nd	-	5	-	5	5	0	9.3	46	-	-	-	-	-	-	-
Cadmium	*1*	*0.4*	nd	nd	-	0.6	-	nd	nd	-	nd	-	-	-	-	-	-	-	-
Chromium	*2*	*5*	30	27	11	35	14	20	46	**79**	39	49	-	-	-	-	-	-	-
Copper	*5*	*5*	132	150	13	140	6	141	202	36	160	12	-	-	-	-	-	-	-
Lead	*5*	*5*	132	145	9	160	18	220	221	0	190	16	-	-	-	-	-	-	-
Nickel	*2*	*5*	14	15	7	16	13	7	9	25	14	**50**	-	-	-	-	-	-	-
Zinc	*5*	*5*	363	481	28	440	18	174	114	42	150	16	-	-	-	-	-	-	-
Mercury	*0.1*	*0.1*	nd	nd	-	nd	-	nd	nd	-	nd	-	-	-	-	-	-	-	-
Arsenic	*0.001*	-	-	-	-	-	-	-	-	-	-	-	nd	nd	nd	-	-	-	-
Cadmium	*0.0001*	-	-	-	-	-	-	-	-	-	-	-	nd	nd	nd	-	-	-	-
Chromium	*0.001*	-	-	-	-	-	-	-	-	-	-	-	nd	nd	nd	-	-	-	-
Copper	*0.001*	-	-	-	-	-	-	-	-	-	-	-	nd	nd	nd	-	-	-	-
Lead	*0.001*	-	-	-	-	-	-	-	-	-	-	-	nd	nd	nd	-	-	-	-
Nickel	*0.001*	-	-	-	-	-	-	-	-	-	-	-	nd	nd	nd	-	-	-	-
Zinc	*0.005*	-	-	-	-	-	-	-	-	-	-	-	nd	nd	nd	-	-	-	-
Mercury	*0.0001*	-	-	-	-	-	-	-	-	-	-	-	nd	nd	nd	-	-	-	-
Organics																			
Benzene	*0.2*	*0.1*	nd	nd	-	nd	-	nd	nd	-	nd	-	-	-	-	nd	nd	nd	-
Toluene	*0.5*	*0.1*	nd	nd	-	nd	-	nd	nd	-	nd	-	-	-	-	nd	3.4	3.5	97
Ethyl benzene	*0.5*	*0.1*	nd	nd	-	nd	-	nd	nd	-	nd	-	-	-	-	nd	6.1	6.2	98
meta- & para-Xylene	*0.5*	*0.2*	nd	nd	-	nd	-	nd	nd	-	nd	-	-	-	-	nd	6.3	6.8	93
ortho-Xylene	*0.5*	*0.1*	nd	nd	-	nd	-	nd	nd	-	nd	-	-	-	-	nd	3	3.2	94
F1 TRH C_6 - C_{10}	*10*	*20*	nd	nd	-	nd	-	nd	nd	-	nd	-	-	-	-	nd	-	-	
F2 TRH >C_{10} - C_{16}	*50*	*50*	nd	nd	-	nd	-	nd	nd	-	nd	-	-	-	-	-	-	-	
F3 TRH >C_{16} - C_{34}	*100*	*100*	nd	nd	**-**	170	**-**	nd	nd	**-**	140	**-**	**-**	**-**	**-**	-	-	-	
F4 TRH >C_{34} - C_{40}	*100*	*100*	100	nd	**-**	130	23	nd	nd	**-**	150	**-**	**-**	**-**	**-**	-	-	-	
Sum PAHs	*0.5*	*0.5*	nd	nd	**-**	nd	-	nd	nd	**-**		-	-	-	-	-	-	-	
Data Quality Indicator			-	-	*<50%*	-	*<50%*	-	-	***<50%***	**-**	***<50%***	-			-	-	-	*70-130%*

Soil Analytical Summary Table Notes

LOR denotes limit of reporting (standard LOR unless otherwise shown)

nd denotes not detected above the LOR

NL denotes non-limiting

- denotes not analysed/not available

Bold - Exceedance of HILs / HSLs

Underline - Exceedance of EILs / ESLs

Italic - Exceedance of Management Limits

RPD denotes relative percent difference

^ denotes raised LOR

TRH C_6-C_{10} F1 = TRH C_6-C_{10} minus BTEX compounds

HSL for VI = Health Screening Levels for Vapour Intrusion

Management limits = Petroleum hydrocarbon management limits (ASC NEPM (2013))

HSLs for direct contact = CRC CARE (2011)

ESL = Ecological Screening Levels

EIL = Ecological Investigation Levels (ASC NEPM (2013))

*analyte list shown on laboratory report

1. Methyl mercury / inorganic mercury

Table 8: Groundwater Monitoring Well Construction Details

Well ID	Date of Installation	Top of Well Casing Elevation (m AHD)	Bottom of Well Depth (m)	Top of Well Screen (m)	Bottom of Well Screen (m)	Initial Water Strike	Initial Groundwater level	Lithology of screened selection
W1	28/05/1997	637.330	12.0	9.0	12.0	11.0	7.207	Silty Clay
W2	28/05/1997	636.230	10.5	7.5	10.5	10.0	6.212	Silty Clay
W3	28/05/1997	635.810	9.0	6.0	9.0	8.5	5.825	Silty Clay
MW01	28/05/1997	637.670	9.0	5.0	9.0	7.5	6.451	Sandy Clay / Clay
MW02	19/08/2020	638.200	9.0	5.0	9.0	5.5	7.952	Sandy Clay / Clay
MW03	19/08/2020	638.600	9.0	5.0	9.0	7.7	8.284	Clay / Sandy Clay
MW04	19/08/2020	638.090	9.0	5.0	9.0	7.0	7.877	Sandy Clay
MW05	19/08/2020	638.110	10.0	5.0	10.0	5.8	7.692	Sandy Clay / Gravelly Clay
MW06	19/08/2020	638.010	9.0	5.0	9.0	6.4	7.238	Clay / Gravelly Clay
MW07	19/08/2020	638.050	9.0	5.0	9.0	7.0	6.755	Clay / Gravelly Clay
MW08	19/08/2020	637.920	6.0	5.0	6.0	6.3	4.238	Sandy Clay / Gravelly Clay
MW09	9/06/2021	637.767	9.0	4.5	9.0	7.9	6.452	Clay / Gravelly Clay
MW10	9/06/2021	634.887	8.0	3.5	8.0	7.5	4.022	Sandy Clay / Gravelly Clay
MW12	9/06/2021	636.155	9.0	4.5	9.0	7.8	5.242	Clay / Gravelly Clay
MW13	9/06/2021	635.497	9.0	4.5	9.0	4.8	4.338	Clay / Gravelly Clay
MW101	19/04/2023	635.133	7.6	3.1	7.6	6.5	7.105	Silty Clay
MW102	19/04/2023	634.400	8.0	3.5	8.0	7.0	7.590	Silty Clay
MW103	19/04/2023	636.403	8.0	3.5	8.0	6.5	7.455	Silty Clay

m AHD: metres Australian Height Datum
MGA: Map Grid of Australia

Table 9: Groundwater Gauging Data

Well ID	Gauging Date	TOC Elevation (mAHD)	Ground Surface Elevation (mAHD)	Depth of Well (mbTOC)	Depth to NAPL (mbTOC)	Depth to Water (mbTOC)	NAPL Thickness (m)	Corrected Depth to Water (m)	Water Elevation (mAHD)
W2	27/04/2023	636.230	635.310	11.513	-	5.365	-	5.365	630.865
W3	27/04/2023	635.810	635.070	9.540	-	5.275	-	5.275	630.535
MW01	27/04/2023	637.670	637.700	8.702	-	6.715	-	6.715	630.955
MW02	26/04/2023	638.200	638.195	8.920	-	7.365	-	7.365	630.835
MW03	26/04/2023	638.600	638.660	8.985	-	7.300	-	7.300	631.300
MW04	26/04/2023	638.090	638.200	9.078	-	7.155	-	7.155	630.935
MW05	26/04/2023	638.110	638.180	9.973	-	6.415	-	6.415	631.695
MW06	27/04/2023	638.010	638.110	8.972	6.095	6.625	0.530	6.625	631.385
MW07	26/04/2023	638.050	638.150	9.187	-	6.025	-	6.025	632.025
MW08	26/04/2023	637.920	637.830	6.133	Well dry				
MW09	26/04/2023	637.767	637.849	8.075	-	7.095	-	7.095	630.672
MW10	27/04/2023	634.887	634.986	8.014	-	4.295	-	4.295	630.592
MW12	26/04/2023	636.155	636.282	8.965	-	5.535	-	5.535	630.620
MW13	26/04/2023	635.497	635.575	9.026	-	4.645	-	4.645	630.852
MW101	27/04/2023	635.133	635.531	7.505	-	4.775	-	5.173	630.358
MW102	27/04/2023	634.400	634.595	7.905	-	3.995	-	4.190	630.405
MW103	27/04/2023	636.403	635.531	8.560	-	5.850	-	4.978	630.553

m AHD:	metres Australian Height Datum
mbTOC:	metres below top of casing
NAPL:	non-aqueous phase liquid

Table 10: Water Quality Parameters

Location ID	Date Sampled	DO (mg/L)	EC (μScm^{-1})	Salinity (ppm)	Salinity (‰)	pH	Eh (mV)	TEMP (ºC)	Purge Volume (L)	Comments
Groundwater										
W2	27/04/2023	4.2	1,777	1,137	1.137	8.86	87.2	15.62	2.5	Clear, no odour or sheen, well in good condition
W3	27/04/2023	3.09	1,252	801	0.801	6.73	99.4	17.95	2.5	Clear, no odour or sheen, well in good condition
MW01	27/04/2023	3.17	1,005	643	0.643	6.97	99.2	17.02	2.5	Slightly cloudy, no sheen or odour, well in good condition
MW02	26/04/2023	3.12	1,567	1,003	1.003	6.80	92.3	19.10	2.5	Slightly cloudy, brown tinge, slight hydrocarbon odour, slight sheen
MW03	26/04/2023	5.2	1,920	1,229	1.229	7.71	101.1	20.15	2.5	Clear, no odour or sheen, well in good condition
MW04	26/04/2023	4.68	1,642	1,051	1.051	7.60	85.2	17.25	2.5	Slighty cloudy, brown tinge, no odour or sheen, well in good condition
MW05	26/04/2023	4.28	1,760	1,126	1.126	6.06	98.2	17.32	2.5	Clear, no odour or sheen
MW06	27/04/2023	2.78	668	428	0.428	6.90	101.2	16.28	2.5	Slightly cloudy, brown tinge, strong hydrocarbon/oil odour and sheen. Dark black LNAPL present in well (0.5 m).
MW07	26/04/2023	4.88	912	584	0.584	6.71	85.2	16.92	2.5	Slightly cloudy, no odour or sheen
MW08	26/04/2023	Well dry								Well dry
MW09	26/04/2023	3.30	1,105	707	0.707	7.18	80.1	15.25	2.5	Brown, turbid, no odour or sheen
MW10	27/04/2023	3.60	549	351	0.351	7.28	67.1	17.25	2.5	Slightly cloudy, brown tinge, no odour or sheen
MW12	26/04/2023	3.68	1,117	715	0.715	6.00	101.9	17.35	2.5	Cloudy, brown, no odour or sheen
MW13	26/04/2023	3.88	898	575	0.575	7.56	79.2	17.80	2.5	Slightly cloudy, brown tinge, no odour or sheen
MW101	27/04/2023	3.54	1,780	1,139	1.139	7.08	107.2	17.21	2.5	Slightly cloudy, brown tinge, no odour or sheen
MW102	27/04/2023	4.12	2,032	1,300	1.300	7.43	116.2	18.12	2.5	Slightly cloudy, brown tinge, no odour or sheen
MW103	27/04/2023	3.11	1,601	1,025	1.025	7.17	106.7	19.05	2.5	Slightly cloudy, brown tinge, no odour or sheen
Surface Water										
SW01	27/04/2023	3.53	279	179	0.179	7.29	83.3	17.36	-	Clear, no odour or sheen.
SW02	27/04/2023	3.21	393	252	0.252	7.62	99.1	17.98	-	Slightly cloudy, slight sheen on surface, no odour

Table 11: Water Analytical Summary - TRH & BTEXN (µg/L)

Sample Identification	Date Sampled	BTEXN					TRH					
		Benzene	Toluene	Ethyl benzene	Xylenes	Naphthalene	C_6 - C_9 TRH	F1>C_6 - C_{10} TRH	F2 >C_{10} - C_{16} TRH	F3 >C_{16} - C_{34} TRH	F4 >C_{34} - C_{40} TRH	>C_{10} - C_{40} TRH
LOR		*1*	*2*	*2*	*2*	*2*	*20*	*20*	*100*	*100*	*100*	*100*
Analytical - Groundwater												
W2	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
W3	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW01	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	340	nd	340
MW02	26/04/2023	nd	nd	nd	nd	nd	nd	nd	740	1,560	nd	2,300
MW03	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW04	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW05	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW07	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW09	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW10	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW12	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW13	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW101	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW102	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW103	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	420	nd	420
Analytical - Groundwater												
SW01	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	420	140	560
SW02	27/04/2023	nd	nd	nd	nd	nd	nd	nd	430	1,900	640	2,970
Statistics												
Samples analysed		17	17	17	17	17	17	17	17	17	17	17
Detects		0	0	0	0	0	0	0	2	5	2	5
% detect		0%	0%	0%	0%	0%	0%	0%	12%	29%	12%	29%
Maximum		<1	<2	<2	<2	<2	<20	<20	740	1,900	<100	2,970
Minimum		<1	<2	<2	<2	<2	<20	<20	<100	<100	<100	<100
Criteria - Commercial / Industrial												
ANZG (2018) 95% Level of Species Protection		950	180	80	75	16	-	-	-	-	-	-
GILs Drinking Water		1	800	300	600	-	-	-	-	-	-	-
HSL D 2 m to < 4 m (Sand)		5,000	NL	NL	NL	NL	NL	6,000	NL	-	-	-
HSL D 4 m to < 8 m (Sand)		5,000	NL	NL	NL	NL	NL	6,000	NL	-	-	-
HSL D > 8 m (Sand)		5,000	NL	NL	NL	NL	NL	7,000	NL	-	-	-
HSL D Intrusive Maintenance Worker 2 m to < 4m (Sand)		NL	NL	NL	NL	NL	NL	NL	NL	-	-	-
HSL D Intrusive Maintenance Worker 4 m to < 8 m (Sand)		NL	NL	NL	NL	NL	NL	NL	NL	-	-	-
HSL D Intrusive Maintenance Worker > 8 m (Sand)		NL	NL	NL	NL	NL	NL	NL	NL	-	-	-

Table 12: Water Analytical Summary - Heavy Metals (µg/L)

Sample Identification	Date Sampled	Hardness (mg $CaCO_3$/L)	Hardness Catergory[1]	Arsenic	Cadmium	Chromium	Trivalent Chromium	Hexavalent Chromium	Copper	Lead	Nickel	Zinc	Mercury
LOR		*1*		*1*	*0.1*	*1*	*10*	*10*	*1*	*1*	*1*	*5*	*0.1*
Analytical - Groundwater													
W2	27/04/2023	169	Hard	nd	nd	26	nd	30	nd	nd	nd	nd	nd
W3	27/04/2023	131	Hard	nd	nd	10	nd	10	4	nd	2	11	nd
MW01	27/04/2023	488	Extremely hard	nd	nd	nd	nd	nd	nd	nd	2	nd	nd
MW02	26/04/2023	214	Very hard	7	nd	nd	nd	nd	nd	nd	2	nd	nd
MW03	26/04/2023	160	Hard	nd	nd	3	nd	nd	nd	nd	nd	nd	nd
MW04	26/04/2023	134	Hard	nd	nd	12	nd	20	2	nd	1	nd	nd
MW05	26/04/2023	114	Moderate	nd	nd	2	nd	nd	nd	nd	nd	nd	nd
MW07	26/04/2023	198	Very hard	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW09	26/04/2023	97	Moderate	nd	nd	5	nd	nd	nd	nd	nd	nd	nd
MW10	27/04/2023	26	Soft	nd	nd	2	nd	nd	nd	nd	nd	nd	nd
MW12	26/04/2023	70	Moderate	nd	nd	5	nd	nd	nd	nd	nd	nd	nd
MW13	26/04/2023	138	Hard	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW101	27/04/2023	166	Hard	nd	nd	nd	nd	nd	1	nd	2	nd	nd
MW102	27/04/2023	356	Very hard	nd	nd	2	nd	nd	nd	nd	nd	nd	nd
MW103	27/04/2023	186	Very hard	nd	nd	nd	nd	nd	2	nd	2	6	nd
Analytical - Surface Water													
SW01	27/04/2023	-	-	nd	nd	nd	-	-	nd	3	nd	1,330	nd
SW02	27/04/2023	-	-	nd	1	3	-	-	38	14	3	683	nd
Statistics													
Samples analysed				17	17	17	15	15	17	17	17	17	17
Detects				1	1	10	0	3	5	2	7	4	0
% detect				6%	6%	59%	0%	20%	29%	12%	41%	24%	0%
Maximum				7.0	0.8	26	<10	30	38	14	3	1,330	<0.1
Minimum				<0.1	<0.1	<1	<10	<10	<1	<1	<1	<5	<0.1
Criteria - Commercial / Industrial													
ANZG (2018) 95% Level of Species Protection				13**	0.2	1*	3.3	1	1.4	3.4	11	8	0.06***
ANZG (2018) 95% Level of Species Protection (Water hardness correction applied)[2]				-	0.97	-	14.1	-	-	32.2	49.5	36.0	-
GILs Drinking Water				10	2	50	50	50	2,000	10	20	-	1

Table 13: Water Analytical Summary - PAHs (µg/L)

Sample Identification	Date Sampled	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Total PAHs	B(a)P TEQ
LOR		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*0.5*	*1*	*1*	*1*	*0.5*	*0.5*
Analytical - Groundwater																			
W2	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
W3	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW01	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW02	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW03	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW04	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW05	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW07	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW09	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW10	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW12	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW13	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW101	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW102	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW103	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Analytical - Surface Water																			
SW01	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SW02	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Statistics																			
Samples analysed		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Detects		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% detect		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Maximum		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<0.5
Minimum		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<0.5	<0.5
Criteria - Commercial / Industrial																			
ANZG (2018) 95% Level of Species Protection		16	-	-	-	0.6***	0.01***	-	-	-	-	-	-	0.1***	-	-	-	-	-
GILs Drinking Water		-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	-

Table 14: Water Analytical Summary - VOCs (µg/L)

Sample Identification	Date Sampled	1,2-dichloroethane	cis-1.2-Dichloroethene	Chloroethane	Chloroform	Chloromethane	Trichloroethene	Tetrachloroethene	Vinyl chloride	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Bromobenzene	Chlorobenzene	Methyl Ethyl Ketone	2-hexanone (MBK)	p-Isopropyltoluene
LOR		*5*	*5*	*50*	*5*	*50*	*5*	*5*	*50*	*5*	*5*	*5*	*5*	*5*	*50*	*50*	*5*
Analytical - Groundwater																	
W2	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
W3	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW01	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW02	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW03	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW04	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW05	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW07	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW09	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW10	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW12	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW13	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW101	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW102	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW103	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Analytical - Surface Water																	
SW01	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SW02	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Statistics																	
Samples analysed		17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17
Detects		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% detect		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Maximum		<5	<5	<50	<5	<50	<5	<5	<50	<5	<5	<5	<5	<5	<50	<50	<5
Minimum		<5	<5	<50	<5	<50	<5	<5	<50	<5	<5	<5	<5	<5	<50	<50	<5
Criteria - Commercial / Industrial																	
ANZG (2018) 95% Level of Species Protection		1,900	-	-	370	-	-	-	-	160	260	60	-	55	-	-	-
GILs Drinking Water		-	60	-	-	4	-	-	0.3	1,500	-	40	-	300	-	-	-

Table 15: Water Analytical Summary - PFAS (µg/L)

Monitoring well / sample location	Date / time sampled	Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Carboxylic Acids					Fluorotelomer Sulfonic Acids				PFAS Sums	
		Perfluorobutane sulfonic acid (PFBS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of PFAS (WA DER List)
LORs		*0.02*	*0.02*	*0.01*	*0.1*	*0.02*	*0.02*	*0.02*	*0.01*	*0.05*	*0.05*	*0.05*	*0.05*	*0.01*	*0.01*
Analytical - Groundwater															
W2	27/4/23	nd	0.01	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.01	0.01
W3	27/4/23	nd	0.01	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.01	0.01
MW01	27/4/23	nd	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.05	0.05
MW02	26/4/23	nd	0.04	**0.08**	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.12**	0.12
MW03	26/4/23	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW04	26/4/23	nd	0.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.04	0.04
MW05	26/4/23	0.18	**0.89**	***2.16***	nd	0.05	0.18	nd	0.04	nd	nd	nd	nd	***3.05***	3.5
MW07	26/4/23	nd	0.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.04	0.04
MW09	26/4/23	nd	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.02	0.02
MW10	27/4/23	nd	0.01	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.01	0.01
MW12	26/4/23	nd	0.03	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.05	0.05
MW13	26/4/23	nd	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.02	0.02
MW101	26/4/23	nd	0.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.04	0.04
MW102	26/4/23	nd	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.02	0.02
MW103	26/4/23	0.03	**0.11**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.11**	0.14
Analytical - Surface Water															
SW01	27/04/2023	nd	0.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.03	0.03
SW02	27/04/2023	nd	0.02	0.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.05	0.05
Statistics															
Samples analysed		17	17	17	17	17	17	17	17	17	17	17	17	17	17
Detects		2	16	4	0	1	1	0	1	0	0	0	0	16	16
% detect		12%	94%	24%	0%	6%	6%	0%	6%	0%	0%	0%	0%	94%	94%
Maximum		0.18	**0.89**	***2.16***	<0.1	0.05	0.18	<0.02	0.04	<0.05	<0.05	<0.05	<0.05	3.05	3.5
Minimum		<0.02	<0.02	<0.01	<0.1	<0.02	<0.02	<0.02	<0.01	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
Criteria - Freshwater															
Drinking Water (Australian Gov. Dept of Health 2019)		-	**0.07**	**0.07**	-	-	-	-	0.56	-	-	-	-	**0.07**	-
Recreational criteria (NHMRC, 2019)[3]		-	*2*	*2*	-	-	-	-	10	-	-	-	-	*2*	-
Ecological (Fresh water 99% Protection of species) (NEMP 2022 V2.0)[4]		-	-	0.00023	-	-	-	-	19	-	-	-	-	-	-

Table 16: Groundwater Analytical Summary - Natural Attenuation Parameters

Sample Identification	Date Sampled	Redox as Eh (mV)	Dissolved Oxygen (mg/L)	Sulfate as SO4 - Turbidimetric	Manganese (mg/L)	Ferrous Iron	Nitrate as N	Methane (µg/L)
LOR		-	-	*1*	*0.001*	*0.05*	*0.01*	*10*
Analytical - Groundwater								
MW01	27/04/2023	99.2	3.17	33	0.359	nd	0.06	nd
MW02	26/04/2023	92.3	3.12	18	1.79	2.8	0.35	848
MW04	26/04/2023	85.2	4.68	122	nd	nd	3.78	nd
MW05	26/04/2023	98.2	4.28	151	nd	3.98	1.80	nd
MW06	27/04/2023	101.2	2.78	1	0.975	nd	0.03	637
MW07	26/04/2023	85.2	4.88	67	nd	nd	18.9	nd
MW09	26/04/2023	80.1	3.30	118	0.018	nd	1.06	nd
MW10	27/04/2023	67.1	3.60	40	nd	nd	1.62	nd
MW12	26/04/2023	101.9	3.68	57	nd	nd	2.31	nd
MW13	26/04/2023	79.2	3.88	37	nd	nd	4.09	nd
MW101	27/04/2023	107.2	3.54	135	1.5	nd	23.1	nd
MW102	27/04/2023	116.2	4.12	114	0.018	nd	29.7	nd
MW103	27/04/2023	106.7	3.11	34	0.398	nd	1.01	nd

Table 17: Water Analytical Summary - Quality Control (µg/L)

Analyte	Primary Laboratory LOR ug/L	Secondary Laboratory LOR ug/L	MW03	QW01	**RPD**	QW02	**RPD**	RB4	RB5	Trip Blank	Trip Spike	Trip Spike Control	Trip Spike
Type	-		*Primary*	*Intra-Laboratory Duplicate*	%	*Inter-Laboratory Duplicate of MW03*	%	*Rinsate samples*		*Lab prep*	*Lab prep*	*Lab*	*Recovery*
Date	-		*26/04/23*	*26/04/23*	-	*26/04/23*	-	*26/04/23*	*27/04/23*	*17/04/23*	*17/04/23*	*17/04/23*	-
Metals													
Arsenic	*1*	-	nd	nd	-	-	-	nd	nd	-	-	-	-
Cadmium	*0.1*	-	nd	nd	-	-	-	nd	nd	-	-	-	-
Chromium	*1*	-	3	3	0	-	-	nd	nd	-	-	-	-
Copper	*1*	-	nd	nd	-	-	-	nd	nd	-	-	-	-
Lead	*1*	-	nd	nd	-	-	-	nd	nd	-	-	-	-
Nickel	*1*	-	nd	nd	-	-	-	nd	nd	-	-	-	-
Zinc	*5*	-	nd	nd	-	-	-	nd	nd	-	-	-	-
Mercury	*0.1*	-	nd	nd	-	-	-	nd	nd	-	-	-	-
BTEXN													
Benzene	*1*	*1*	nd	nd	-	nd	-	-	-	nd	19	20	95
Toluene	*2*	*1*	nd	nd	-	nd	-	-	-	nd	18	20	90
Ethylbenzene	*2*	*1*	nd	nd	-	nd	-	-	-	nd	18	20	90
meta- & para-Xylene	*2*	*2*	nd	nd	-	nd	-	-	-	nd	18	20	90
ortho-xylene	*2*	*1*	nd	nd	-	nd	-	-	-	nd	19	20	95
Naphthalene	*5*	*10*	nd	nd	-	nd	-	-	-	nd	18	20	90
C6 - C9 Fraction	*20*	*20*	nd	nd	-	nd	-	-	-	nd	-	-	-
C6 - C10 Fraction minus BTEX (F1)	*20*	*20*	nd	nd	-	nd	-	-	-	nd	-	-	-
>C10 - C16 Fraction minus Naphthalene (F2)	*100*	*50*	nd	nd	-	nd	-	-	-	-	-	-	-
>C16 - C34 Fraction	*100*	*100*	nd	nd	-	nd	-	-	-	-	-	-	-
>C34 - C40 Fraction	*100*	*100*	nd	nd	-	nd	-	-	-	-	-	-	-
>C10 - C40 Fraction (sum)	*100*	*100*	nd	nd	-	nd	-	-	-	-	-	-	-
Sum of PAHs	*0.5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
VOCs													
1,2-dichloroethane	*5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
cis-1.2-Dichloroethene	*5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
Chloroethane	*50*	*5*	nd	nd	-	nd	-	-	-	-	-	-	-
Chloroform	*5*	*5*	nd	nd	-	nd	-	-	-	-	-	-	-
Chloromethane	*50*	*5*	nd	nd	-	nd	-	-	-	-	-	-	-
Trichloroethene	*5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
Tetrachloroethene	*5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
Vinyl chloride	*50*	*5*	nd	nd	-	nd	-	-	-	-	-	-	-
1,2-dichlorobenzene	*5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
1,3-dichlorobenzene	*5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
1,4-dichlorobenzene	*5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
Bromobenzene	*5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
Chlorobenzene	*5*	*1*	nd	nd	-	nd	-	-	-	-	-	-	-
Polyfluoroalkyl Substances (PFAS)													
PFHxS	*0.01*	*0.01*	nd	nd	-	nd	-	-	-	-	-	-	-
PFOS	*0.01*	*0.01*	nd	nd	-	nd	-	-	-	-	-	-	-
Sum of PFOS & PFHxS	*0.01*	*0.01*	nd	nd	-	nd	-	-	-	-	-	-	-
PFOA	*0.01*	*0.01*	nd	nd	-	nd	-	-	-	-	-	-	-
Data Quality Indicator	-				*<50%*		*<50%*			-	-	-	*70-130%*

Water Analytical Summary Table Notes

LOR - limit of reporting (standard LOR unless otherwise shown)

nd - not detected above the LOR

Underlined - Exceeds criteria

Bold - Exceeds criteria

^ - LOR raised

- denotes not analysed/not available

NL - Not limiting

[1]Based on table Table 3.4.4 within ANZECC (2000)

[2]Calculated based on an average hardness value of 176 mg/L $CaCO_3$

*- Chromium criteria as Cr(VI)

** - Low reliability trigger value, used as interim working level only.

*** - Bioaccumulative, therefore a higher protection level has been adopted. For example, a PC95 will be increased to PC99, a PC80 will be increased to PC90.

Health Screening Levels (HSLs) for vapour intrusion in a clay geology has been derived based on field observations.

HSL D - Commercial/industrial

GILs Drinking Water - National Health and Medical Research Council (NHMRC) (2011) Australian Drinking Water Guidelines (Updated August 2018) (NHMRC (2011) ADWG)

ANZG (2018) - Australian and New Zealand Guidelines for Fresh and Marine Water Quality (http://www.waterquality.gov.au/anz-guidelines as accessed 26 April 2022) (ANZG 2018)

3. NHMRC (2008) National Health and Medical Research Council, *Guielines for Managing Risks in Recreational Waters*

4. HEPA (2022V2.0), *PFAS National Environmental Management Plan Version 2.0* , Heads of EPA Australia and New Zealand 2022’.

Appendix A

Stormwater and Drainage

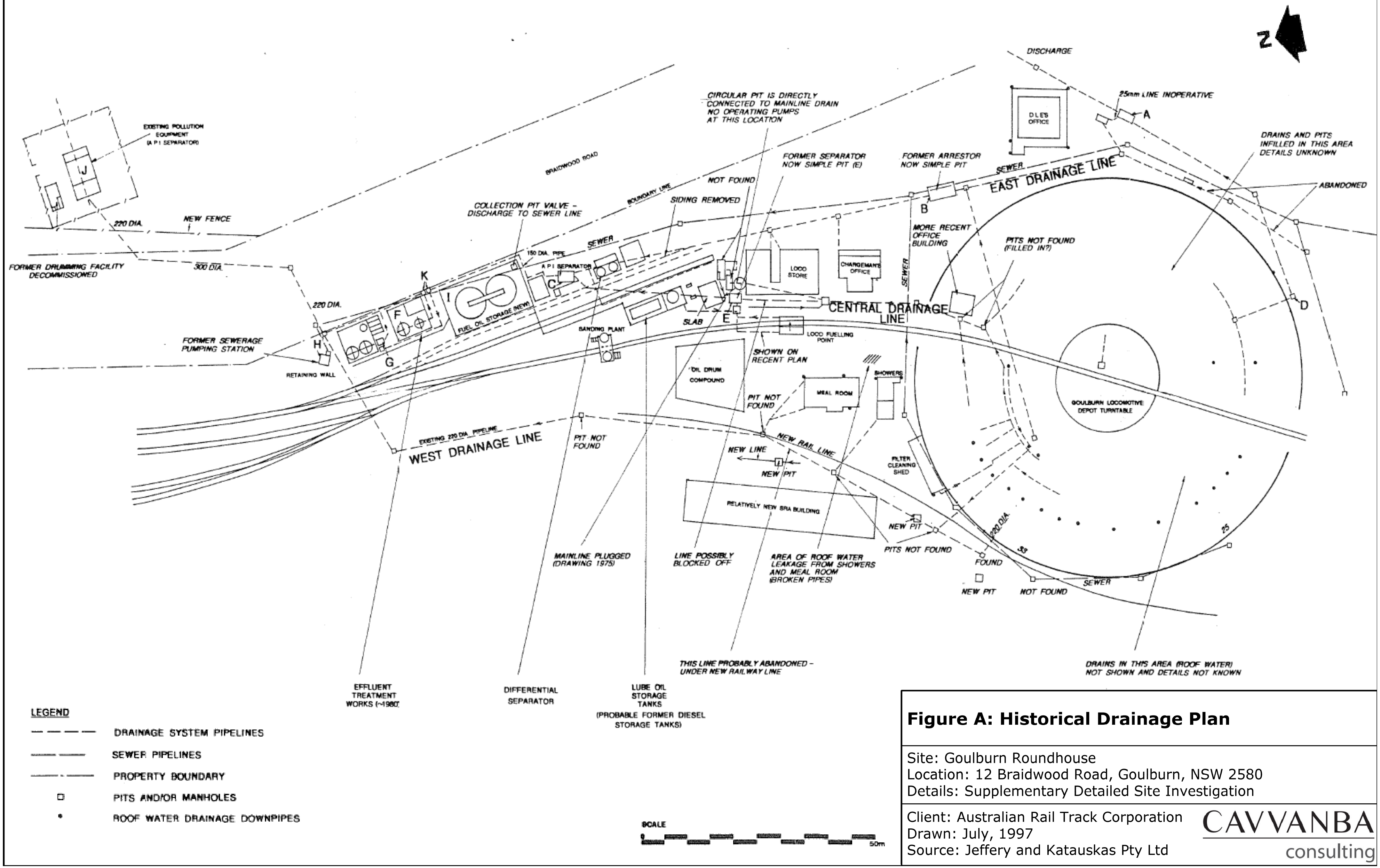


Figure A: Historical Drainage Plan

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: July, 1997
Source: Jeffery and Katauskas Pty Ltd

CAVVANBA
consulting

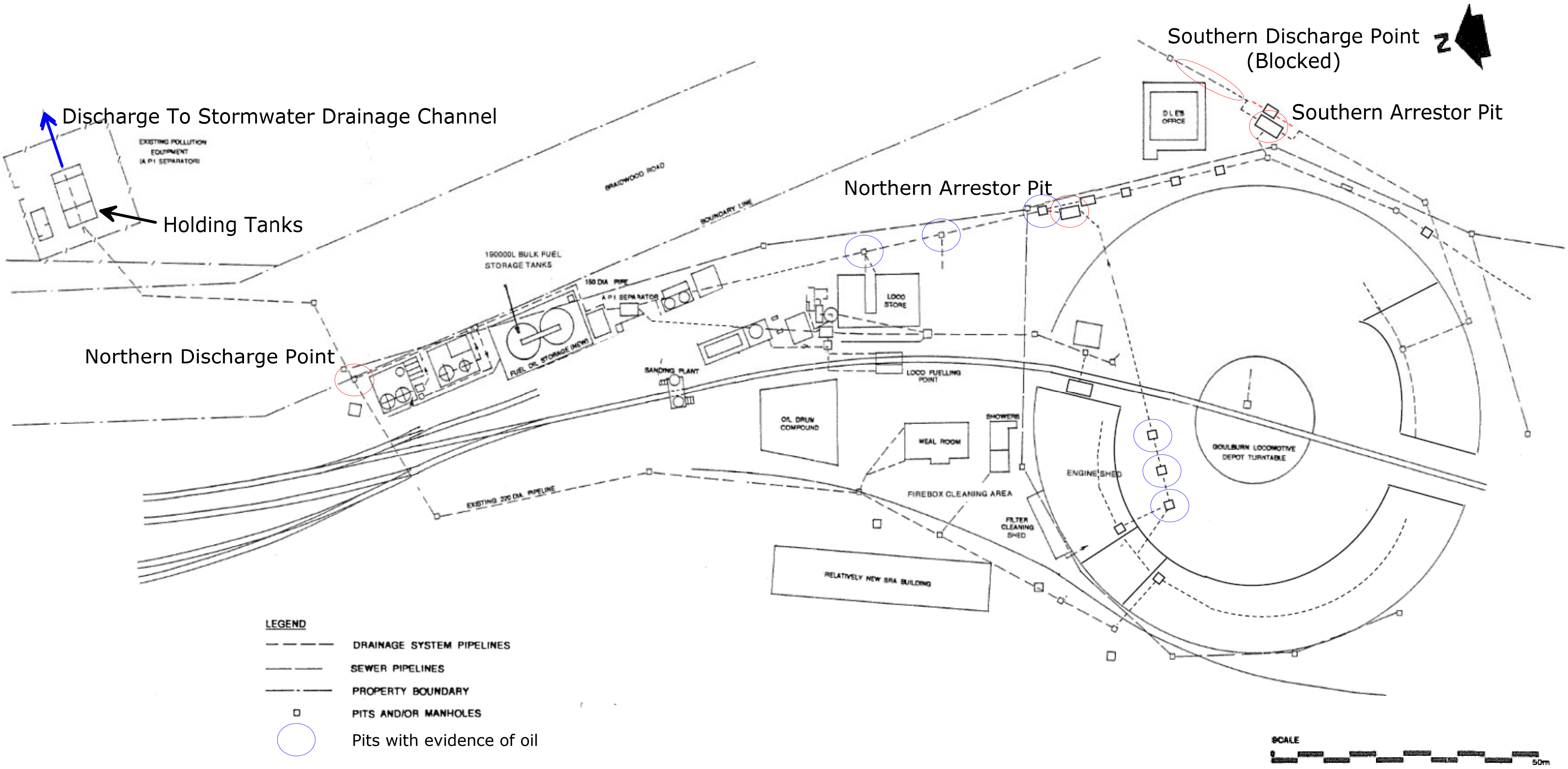


Figure B: Updated Drainage Plan - 2023

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Supplementary Detailed Site Investigation

Client: Australian Rail Track Corporation
Drawn: July, 1997, Updated October 2023
Source: J&K and ARTC

CAVVANBA
consulting

Bulk Recovery Solutions P/L

16 Kerr Road
Ingleburn, NSW
2565

A.B.N: 51 148 898 784

Ph: (02) 8717 3366
Fax:

Invoice Date: 21−JUN−23
Invoice No: 1105421

TAX INVOICE

Total Due: **1,023.31**

Bill To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts − 0249400410 LYDIA
2211
Ph: 02 9708 0800 Fax: 02

Deliver To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts − 0249400410 LYDIA
2211

Account	Order Ref:	Terr.:	Whse:
500129	:143891	5124	5124

Rep:	Cust. Ref No. :	Our Order No.
TIM		1105421

Item Code	Item Description	Ordered	Shipped	B/Ord	UOM	Unit Price	Line Total
J120−B	J120−B Oily Water>10% <30%	1.90	1.90	0.00	TON	290.00	551.00
WASHOUTJ120	Wash Water for J120	1.00	1.00	0.00	EACH	190.00	190.00
WTL	Waste Trackable Levy	1.90	1.90	0.00	TON	81.20	154.28
WTFP	Waste Tracking Fee Paperwork − 2T01357259	1.00	1.00	0.00	EACH	35.00	35.00
	XN29VL : 21−Jun−23 12:59						

Del Instructions:

Direct All EFT Payments To:

Bank:	Westpac Banking Corp Fairfield Neeta City
A/C Name:	Bulk Recovery Solutions P/L
BSB:	032−072
Account No:	287975

Terms: 30 Days

Ex Tax:	930.28
GST:	93.03
Freight:	0.00
Total: AUD	**1,023.31**

Bulk Recovery Solutions P/L
16 Kerr Road
Ingleburn, NSW
2565
A.B.N: 51 148 898 784

Ph: (02) 8717 3366
Fax:

Invoice Date: 22−JUN−23
Invoice No: 1105544

TAX INVOICE

Total Due: **9,093.14**

Bill To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts − 0249400410 LYDIA
2211
Ph: 02 9708 0800 Fax: 02

Deliver To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts − 0249400410 LYDIA
2211

Account	Order Ref:	Terr.:	Whse:
500129	:143979	5124	5124

Rep:	Cust. Ref No. :	Our Order No.
TIM		1105544

Item Code	Item Description	Ordered	Shipped	B/Ord	UOM	Unit Price	Line Total
J120−SLUDGE	J120−SLUDGE Oily Water Sludge > 30%	12.74	12.74	0.00	TON	550.00	7,007.00
WASHOUTJ120	Wash Water for J120	1.00	1.00	0.00	EACH	190.00	190.00
WTL	Waste Trackable Levy	12.74	12.74	0.00	TON	81.20	1,034.49
WTFP	Waste Tracking Fee Paperwork − 2T01357056	1.00	1.00	0.00	EACH	35.00	35.00
	XO67IY : 22−Jun−23 13:25						

Del Instructions:

Direct All EFT Payments To:

Bank:	Westpac Banking Corp Fairfield Neeta City
A/C Name:	Bulk Recovery Solutions P/L
BSB:	032−072
Account No:	287975

Terms: 30 Days

Ex Tax:	8,266.49
GST:	826.65
Freight:	0.00
Total: **AUD**	**9,093.14**

Bulk Recovery Solutions P/L
16 Kerr Road
Ingleburn, NSW
2565
A.B.N: 51 148 898 784

Ph: (02) 8717 3366
Fax:

Invoice Date: 10-AUG-23
Invoice No: 1109771

TAX INVOICE

Total Due: 2,064.63

Bill To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts - 0249400410 LYDIA
2211
Ph: 02 9708 0800 Fax: 02

Deliver To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts - 0249400410 LYDIA
2211

Account	Order Ref:	Terr.:	Whse:
500129	25616:147511	5124	5124
Rep:	Cust. Ref No. :	Our Order No.	
TIM		1109771	

Item Code	Item Description	Ordered	Shipped	B/Ord	UOM	Unit Price	Line Total
J120-A	J120-A Oily Water <10%	6.64	6.64	0.00	TON	190.00	1,261.60
WTL	Waste Trackable Levy	6.64	6.64	0.00	TON	87.40	580.34
WTFP	Waste Tracking Fee Paperwork - 2T01372881	1.00	1.00	0.00	EACH	35.00	35.00
	XN96ST : 10-Aug-23 14:23						

Del Instructions:

Direct All EFT Payments To:

Bank:	Westpac Banking Corp Fairfield Neeta City
A/C Name:	Bulk Recovery Solutions P/L
BSB:	032-072
Account No:	287975

Terms: 30 Days

Ex Tax:	1,876.94
GST:	187.69
Freight:	0.00
Total: AUD	**2,064.63**

Bulk Recovery Solutions P/L
16 Kerr Road
Ingleburn, NSW
2565
A.B.N: 51 148 898 784

Ph: (02) 8717 3366
Fax:

Invoice Date: 09-AUG-23
Invoice No: 1109626

TAX INVOICE

Total Due: 1,944.08

Bill To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts - 0249400410 LYDIA
2211
Ph: 02 9708 0800 Fax: 02

Deliver To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts - 0249400410 LYDIA
2211

Account	Order Ref:	Terr.:	Whse:
500129	25616:147378	5124	5124

Rep:	Cust. Ref No. :	Our Order No.
TIM		1109626

Item Code	Item Description	Ordered	Shipped	B/Ord	UOM	Unit Price	Line Total
J120-A	J120-A Oily Water <10%	5.56	5.56	0.00	TON	190.00	1,056.40
WASHOUTJ120	Wash Water for J120	1.00	1.00	0.00	EACH	190.00	190.00
WTL	Waste Trackable Levy	5.56	5.56	0.00	TON	87.40	485.95
WTFP	Waste Tracking Fee Paperwork - 2T01371243	1.00	1.00	0.00	EACH	35.00	35.00
	XN96ST : 09-Aug-23 09:45						

Del Instructions:

Direct All EFT Payments To:
Bank: Westpac Banking Corp Fairfield Neeta City
A/C Name: Bulk Recovery Solutions P/L
BSB: 032-072
Account No: 287975

Terms: 30 Days

Ex Tax:	1,767.35
GST:	176.73
Freight:	0.00
Total: AUD	**1,944.08**

Bulk Recovery Solutions P/L
16 Kerr Road
Ingleburn, NSW
2565
A.B.N: 51 148 898 784

Ph: (02) 8717 3366
Fax:

Invoice Date: 09-AUG-23
Invoice No: 1109700

TAX INVOICE

Total Due: **882.19**

Bill To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts - 0249400410 LYDIA
2211
Ph: 02 9708 0800 Fax: 02

Deliver To: Aqua Assets Pty Ltd
12 Nelson Ave
Padstow
NSW

Accounts - 0249400410 LYDIA
2211

Account	Order Ref:	Terr.:	Whse:
500129	25616:147443	5124	5124
Rep:	Cust. Ref No. :	Our Order No.	
TIM		1109700	

Item Code	Item Description	Ordered	Shipped	B/Ord	UOM	Unit Price	Line Total
J120-A	J120-A Oily Water <10%	2.08	2.08	0.00	TON	190.00	395.20
WASHOUTJ120	Wash Water for J120	1.00	1.00	0.00	EACH	190.00	190.00
WTL	Waste Trackable Levy	2.08	2.08	0.00	TON	87.40	181.79
WTFP	Waste Tracking Fee Paperwork - 2T01371242	1.00	1.00	0.00	EACH	35.00	35.00
	AQ23EA : 09-Aug-23 19:07						

Del Instructions:

Direct All EFT Payments To:
Bank: Westpac Banking Corp Fairfield Neeta City
A/C Name: Bulk Recovery Solutions P/L
BSB: 032-072
Account No: 287975

Terms: 30 Days

Ex Tax:	801.99
GST:	80.20
Freight:	0.00
Total: AUD	**882.19**

Appendix B

Data Quality Objectives: Planning process Output

DQOs Planning Process Output – Decision Problems

Project:	Supplementary Detailed Site Investigation – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580
Field work stage:	Supplementary Detailed Site Investigation
DQOs completed (by/date):	Mr Zac Laughlan – 27 March 2023
DQOs reviewed (by/date):	Mr Drew Wood – 27 March 2023
Background to DQOs:	The proposal to Australian Rail Track Corporation (ARTC) dated 22 February 2023 was prepared based on information provided to Cavvanba by ARTC. The site has over 100 years of industrial activity having officially opened as an operational railway Roundhouse by the NSW Government Railways in 1918, with railway maintenance activities commencing at the site in approximately 1869. The site has been used to maintain a large portion of the railways fleet of steam locomotives, followed by diesel locomotives being maintained at the site from the 1950's until its closure in 1981. A supplementary detailed site investigation was required as the next stage of the investigation to address data gaps identified by Cavvanba, reduce uncertainties in the assessment of remedial options and regulation of the site. It was also to address NSW EPA and Site Auditor comments on the investigations and assessments to date. Refer to Section 1 of the body of the report.
DQOs Objective:	Estimate problem

Step 1 - State the problem

Summarise the contamination problem that will require new environmental data, and identify the resources available to resolve the problem.

1.1 Write a brief summary of the contamination problem:

The objectives of the supplementary DSI are stated in Section 1.2 of the main body of this report.

The overarching objectives of the works were to re-evaluate and supplement previous investigation data, and address the key issues raised by the Site Auditor and the NSW EPA. The proposed works were to assist in reducing uncertainties in the assessment of remedial options, and regulation of the site.

1.2 Identify members of the planning team

Person	Organisation	Role
Drew Wood	Cavvanba	Principal Environmental Scientist
Mark Curran	Australian Rail Track Corporation	Senior Environmental Specialist
Ian Gregson	GHD Pty Ltd	Site Auditor

Step 1 - State the problem *Summarise the contamination problem that will require new environmental data, and identify the resources available to resolve the problem.*			
	Zac Laughlan	Cavvanba	Field Environmental Engineer
	Ben Wackett	Cavvanba	Principal Environmental Scientist
	Various	GLRPS	Lessee
1.3	Develop/refine the conceptual site model (CSM) (see **CSM**): The conceptual site model is outlined in the body of the report, including details of contamination sources, exposure pathways and receptors.		
1.4	Define the summary exposure scenarios (Y/N)*:		

Soil/dust	Y/N	Groundwater	Y/N	Surface Water	Y/N
Dermal	Y	Dermal	P	Dermal	U
Ingestion	Y	Ingestion	P	Ingestion	U
Inhalation	Y	Inhalation	P	Inhalation	U
Ecological	P	Ecological	P	Ecological	P

** C = Commercial worker; M = Maintenance worker (i.e. during site works/construction); U = Unlikely; P = Potential. *Add additional if required.*

1.5	Specify the available resources and constraints, such as relevant deadlines for the study, budget, availability of personnel and schedule, etc.: The scope of work and methodology was consistent with that detailed within Cavvanba's proposal titled *Contaminated land consulting services – Goulburn Roundhouse – 12 Braidwood Road, Goulburn NSW 2580* submitted to ARTC in February 2023 (Cavvanba Ref: P20025.76.5). The site is an operational roundhouse and museum, therefore the investigation works progressed with a practical allowance for working with and around on-site activities and utilities, including existing infrastructure, concrete slab / footings, underground services, subterranean waste oil lines and site-specific geological features.

Step 2 - Identify the decision *To identify the decision that requires new environmental data to address the contamination problem.*	
2.1	Identify the principal study questions: Define the extent of on-site contamination that may represent a risk to human health or the environment under the prescribed land use scenario?
2.2	Identify the alternative outcomes or actions that could result from resolution of the principal study questions: Where contamination poses an unacceptable risk to human health and/ or the environment, additional remediation, management and/or modification of the proposed remediation works, and current site activities will be required.

Step 2 - Identify the decision *To identify the decision that requires new environmental data to address the contamination problem.*	
2.3	Combine the principal study questions and the alternative actions into decision statements: If the contamination present at the site is adequately characterised, appropriate and justifiable remediation and/or management measures will be actioned to ensure the protection of human health and the environment. If the contamination present at the site is not adequately characterised and there is insufficient information to develop appropriate and justifiable remediation and/or management measures to ensure the protection of human health and the environment, further investigation will be required.
2.4	Organise multiple decisions (attached flow charts/logic diagrams, summary tables, etc.): N/A

Step 3 - Identify the inputs to the decision *To identify the information that will be required to support the decision and specify which inputs require new environmental measurements.*	
3.1	Identify the information that will be required to resolve the decision statements, including existing information and new environmental data, and identify the sources for each item of information required:
	Existing information:
	Refer to the previous environmental investigations and plans listed in Section 12 of the Supplementary DSI report.
	New environmental data:
	Measurements of soil, groundwater and surface water for known contaminants of concern (COCs), being total recoverable hydrocarbons (TRH), benzene, toluene, ethyl-benzene, xylenes and naphthalene (BTEXN), polycyclic aromatic hydrocarbons (PAHs), phenols, heavy metals (As, Hg, Cd, Cr (total), Cr (III), Cr(VI) Cu, Pb, Ni and Zn), organochlorine and organophosphate pesticides (OCPs and OPPs), volatile organic compounds (VOCs), per-and polyfluoroalkyl substances (PFAS) and asbestos. Furthermore, natural attenuation parameters, stormwater and drainage investigation data, geological logs, field data and observations provide additional environmental data.

Step 3 - Identify the inputs to the decision *To identify the information that will be required to support the decision and specify which inputs require new environmental measurements.*	
3.2	Identify the information needed to establish the action level: The Tier 1 assessment criteria was sourced from guidelines made or approved under the *Contaminated Land Management (CLM) Act (1997),* and are based on a review of the following reference documents: • National Environment Protection Council (NEPC) (April 2013) National Environment Protection (Assessment of Site Contamination) Measure 1999, NEPC, Canberra (ASC NEPM 2013). • CRC Care Technical Report no. 10 – Health screening level for petroleum hydrocarbon in soil and groundwater – Part 2: Application Document (CRC Care, 2011). • *PFAS National Environmental Management Plan Version 2.0 – January 2020* (PFAS NEMP) (Heads of EPAs Australia and New Zealand (HEPA), 2020) • National Health and Medical Research Council (NHMRC) (2011) Australian Drinking Water Guidelines (Updated August 2018) (NHMRC (2011) ADWG). With respect to asbestos, the criteria outlined in the ASC NEPM (2013) is applicable, which includes a requirement for the top 10 cm to be free of visible asbestos.
3.3	Confirm that appropriate analytical methods exist to provide the necessary data: Feasible analytical methods, both field and laboratory were consistent with existing guidance including being in accordance with ASC NEPM (2013). The laboratories used as part of the investigation were national association of testing authorities (NATA) accredited and use analytical methods based on USEPA and APHA methods. All PCOC limits of reporting were less than the applicable assessment criteria.

Step 4 - Define the boundaries of the study *To define the spatial and temporal boundaries that the data must represent to support the decisions.*	
4.1	Specify the characteristics that define the population of interest: The site is referred to as 12 Braidwood Road, Goulburn NSW 2580, being Lot 2 in DP 1002813, as presented on Figure 1. The population of interest for soil was limited to further characterising and delineating known contamination areas, and within areas not previously assessed on-site. The assessment of soils included the identified of ACM presence across the ground surface of the site, including within shallow fill material using hand tools only. It was also completed to provide an assessment of COC concentrations in surface and shallow soils. For groundwater, the population of interest was associated with assessing groundwater within the location of the decommissioned diesel aboveground storage tanks and effluent treatment plant, and an updated assessment of groundwater conditions across the site. A stormwater and drainage investigation was conducted by ARTC to determine areas of potential soil, groundwater and/or surface water contamination as a result of integrity issues associated with this infrastructure.

Step 4 - Define the boundaries of the study *To define the spatial and temporal boundaries that the data must represent to support the decisions.*	
4.2	Define the geographic area and media to which the decision statement applies: The lateral boundary is defined as the site, referred to as 12 Braidwood Road, Goulburn NSW 2580 (Lot 2 in DP 1002813). The investigation included the vertical extent of investigation to a maximum depth of 8 m and within the site boundary where access could be achieved. The media to which the decision statement applies includes fill material, natural soils, surface water and groundwater. Media is also stratified depending on the nature of the material encountered (i.e. fill material/natural soil) and surface water / groundwater. Groundwater is defined as the unconfined water bearing zone in natural clays.
4.3	When appropriate, divide the populations into strata that have relatively homogenous characteristics: To summarise stratification, it is desirable for studying subpopulations or for reducing the complexity of the problem by breaking it into more manageable pieces. It can also improve the efficiency of the sampling design, and the planning team can subsequently make separate decisions about each stratum as well as the entire population. As previously discussed, this will be applied to fill material and natural soil, groundwater and surface water.
4.4	Determine the time frame to which the decision applies: The timeframe is in accordance with the approved VMP for the site, VMP No. 20231709, dated 6 July 2023.
4.5	Determine when to collect data: The investigation was undertaken during normal working hours, Monday to Friday.
4.6	Define the scale of the decision making: The scale of decision making was aimed at the collection of sufficient data such that an assessment can be made regarding whether the contamination at the site presents an unacceptable risk to human health or the environment both on and off-site, including defining the extent of remediation / management required at the site. Other aspects of site suitability are not being addressed in this assessment. It is acceptable for no decision to be made regarding landuse suitability if unacceptable uncertainty arises from the data collection stage.
4.7	Identify any practical constraints on data collection: The practical constraints on the data collection included above and below ground services on-site and where investigation locations could be safely achieved. For the stormwater and drainage investigation this included physically accessible below ground infrastructure.

Step 5 - Develop the analytic (statistical) approach *Develop a logical "if …, then …, else …" statement that defines the conditions that would cause the decision maker to choose among alternative actions.*	
5.1	Specify the statistical parameter that characterises the population of interest, such as mean, median, maximum or proportion, etc.: The 95% upper confidence limit (UCL) of the arithmetic average concentration is the primary parameter used in making decisions for soils. Other parameters may be appropriate, based on site specific considerations and the objectives of the study, e.g. maximum, mean, median, or specified percentiles. For all statistical tests, appropriate grouping of data by media/strata is required. For some tests, seasonality needs to be considered. Requirements for statistical interpretation of data may also include that the relevance of localised elevated values is considered by using additional tests, e.g. ASC NEPM 2013 specifies that the standard deviation of the results should be less than 50% of the criterion; and no single value should exceed 250% of the criterion.
5.2	Specify the action level for the decision: Analytical actions levels were based on guidelines made or approved under the *Contaminated Land Management (CLM) Act (1997)*, and included the ASC NEPM (2013), CRC CARE (2011) and PFAS NEMP. The criteria is not clean-up criteria, therefore exceedances were screened to determine whether further investigation, management or remediation is required.
5.3	Confirm that measurement detection will allow reliable comparisons with the action level: Representative samples were collected and submitted to a NATA accredited laboratory for analysis. Standard limits of reporting were considered to be appropriate. Visual observations on the nature and extent of contamination was also made during the investigation.
5.4	Combine the outputs from the previous DQOs steps and develop an "if ..., then ..., else ..." theoretical decision rule based on the chosen action level: If statistical parameters of the data exceed applicable action levels, further remediation or management may be required. For example, if the 95% UCL of the arithmetic average is ≤ the action level, then the site may be considered suitable for continued commercial/industrial landuse, otherwise additional investigation, remediation or management will be required.

Step 6 – Specify performance or acceptance criteria *To specify probability limits for false rejection and false acceptance decision errors.*	
6.1	Specify the decision rule as a statistical hypothesis test: Project specific, but for landuse suitability the statistical hypotheses are: - null hypotheses (H_O) the 95% UCL is > action level; and - alternate hypotheses (H_A) the 95% UCL is ≤ action level.

Step 6 – Specify performance or acceptance criteria *To specify probability limits for false rejection and false acceptance decision errors.*	
6.2	Examine consequences of making incorrect decisions from the test: False rejection or Type I error of determining the site is suitable when it is not (wrongly rejects a true H_O). Consequence is potential risks to human health and/or the environment. False acceptance or Type II error of determining the site is not suitable when it is (wrongly accepts a false H_O). Consequence is unnecessary expenditure of resources or a site not being used for its highest value.
6.3	Place acceptable limits on the likelihood of making decision errors: The Australian Standard (AS 4482.1) specifies an alpha risk (Type I error) of $\alpha = 0.05$, and a beta risk (Type II error) of $\beta = 0.2$. Application of these include the 95% UCL (α only as a onesided test is used), and determination of the number of samples required to determine the average concentration (Appendix D of AS 4482.1), which should be used to confirm that sufficient samples have been analysed to support the decision.

Step 7 – Optimise the design for obtaining data *To identify a resource effective sampling and analysis design for generating data that are expected to satisfy the DQOs.*	
7.1	Document the final sampling and analysis design, along with a discussion of the key assumptions underlying this design: The investigation strategy was designed to further characterise and delineate known contamination areas, and within areas not previously investigated or where there was limited spatial coverage. A visual appraisal of surface soils for the presence / absence of ACM was also completed within the vicinity of each sampling location, in addition to the visual appraisal of the entire site surface completed as part of the ACM hand-picking exercise in June 2023. The stormwater and drainage investigation was completed by Aqua Assets Pty Ltd under the supervision and direction of ARTC. The findings of which, were provided to Cavvanba at the cessation of the fieldwork program. The sampling and analysis design is documented within Section 5.0 of the Supplementary DSI report. Soil, groundwater and surface water samples were analysed for actual and potential COCs.
7.2	Detail how the design should be implemented, together with contingency plans for unexpected events: Prior to commencing the intrusive investigation, any unexpected finds were to be clearly communicated to ARTC including requirements for further investigation.
7.3	Determine the quality assurance and quality control (QA/QC) procedures that would be performed to detect and correct problems to ensure defensible results: The field QA, and the field and laboratory QC, are described in the *Data Usability Summary Assessment*. In summary, the following QC samples were completed in accordance with the ASC NEPM 2013.

Step 7 – Optimise the design for obtaining data

To identify a resource effective sampling and analysis design for generating data that are expected to satisfy the DQOs.

	Field QC samples		Lab QC samples	
	Blind duplicate	≥ 5%	Lab blank	≥ 1/lab batch
	Blind triplicate	≥ 5%	Surrogate spike	Organics by GC
	Rinsate sample	≥ day	LCS	≥ 1/lab batch
	Trip blank	≥ 1/field batch	Matrix spike	≥ 1/media type
	Trip spike	≥ 1/field batch	Lab duplicate	≥ 10%
7.4	Document the operational details and theoretical assumptions of the selected design in the sampling, analysis and quality plan (SAQP): Prior to commencing the intrusive investigation, it was assumed that there would be no unexpected finds and unimpeded access was achievable to all proposed investigation locations. The rationale for the sampling design is detailed within Section 5.0 of the Supplementary DSI.			

Appendix C

Calibration Certificates, Field Forms and Survey Data

Photoionisation Detector Calibration Record

Job Ref.....2002576..... Location.....Goulburn Roundhouse Personnel.....ZL/CC.....

Serial Number	Date	Time	Span gas conc' (e.g 100 ppm isobutylene)	Span gas reading	Fresh air Cal reading	Initials
592-905868	18.4-23	10:56	100	99.4	0.0	ZL/CC
" "	19.4.23	7:25	100	99.6	0.0	ZL/CC
" "	20.4.23	7:22	100	99.8	0.0	ZL/CC
" "	21.4.23	7:15	100	99.7	0.0	ZL/CC

Groundwater – SWLs

Job Ref 20025.76 Initials ZL

Location Godwin Date 26.4.23

Well ID	Date / Time	SWL (m BTOC)	NAPL Depth (mBTOC)	Comments
MW08	26 4.23	Dry	—	—
MW07	↓	6.025	nil	—
MW13		4.645	nil	—
MW05		6.415	nil	—
MW04		7.155	nil	—
MW03		7.300	nil	—
MW02		7.365	nil	Slight hydrocarbon odour, sheen
MW09		7.095	nil	—
MW12		5.535	nil	—
MW10	27.4.23	4.295	nil	—
W2		5.365	nil	—
MW01		6.715	nil	—
MW101		4.775	nil	—
MW102		3.995	nil	—

Well ID	Date / Time	SWL (m BTOC)	NAPL Depth (mBTOC)	Comments
MW103	27.4.23	5.850	nil	—
W3		5.275	nil	—
MW06		6.625	6.095	LNAPL on surface strong hydrocarbon/oil odour

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: W2
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27/04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other

Total Depth of Well (TD in m BTOC): 11.513

Water Level Depth WL in m BTOC): 5.365

Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)

Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25 mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 25L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	5.75	1.145	15.58	5.68	87.9	5.425		
10	1.0	5.85	1.175	15.28	4.25	87.2	5.438		
15	1.5	5.86	1.177	15.38	4.16	87.1	5.450		
20	2.0	5.87	1.779	15.76	4.11	87.2	5.468		
25	2.5	8.86	1.777	15.62	4.20	87.2	5.472		

Observations during purging (well condition, turbidity, colour, odour, sheen):
clear, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method
☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: W2

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	~~4~~6	
3	ml plastic	7	HNO_3	1	field filtered? [✓ Y] / N
2	ml VOA vials	2	HCl		
			H_2SO_4	2	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: W3
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27/04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME	**PURGE METHOD**
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
Total Depth of Well (TD in m BTOC): 9.540	☐ Pump – Type: ☒ Submersible ☐ Peristaltic ☐ Other
Water Level Depth WL in m BTOC): 5.275	**PUMP INTAKE SETTING**
Number of well volumes to be purged (# VOLS) ☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other	Depth (m BTOC) Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25 mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	6.81	1.319	18.74	3.72	99.6	5.320		
10	1.0	6.75	1.250	18.20	3.28	99.2	5.328		
15	1.5	6.74	1.248	18.15	3.23	99.1	5.420		
20	2.0	6.75	1.251	18.05	3.10	99.3	5.425		
25	2.5	6.73	1.252	17.95	3.09	99.4	5.430		

Observations during purging (well condition, turbidity, colour, odour, sheen):
clear, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☒ Same as purge method

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: W3

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	4	
3	ml plastic	5	HNO_3	1	field filtered? (Y) / N
2	ml VOA vials	2	HCl		
			H_2SO_4	2	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples			Blank Samples			Other Samples	
Original No	Duplicate No		Type	Sample No		Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW01
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27/04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other

Total Depth of Well (TD in m BTOC): 8.702

Water Level Depth WL in m BTOC): 6.715

Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)

Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25 min PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	7.02	1.074	17.20	3.28	99.7	6.825		
10	1.0	7.01	1.028	17.67	3.16	99.6	6.872		
15	1.5	6.99	1.010	17.28	3.19	99.2	6.878		
20	2.0	6.98	1.009	17.10	3.29	99.1	6.905		
25	2.5	6.97	1.005	17.02	3.17	99.2	6.916		

Observations during purging (well condition, turbidity, colour, odour, sheen):
Slightly cloudy, brown tinge, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method
☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW01

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI
Job Number: 20025.76
Recorded By: Z.Laughlan
Date: 26 /04/2023

Well No: MW02
Well Type: ☒ Monitor ☐ Extractor ☐ Other
Well Material: ☒ PVC ☐ SS ☐ Other
Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other
Total Depth of Well (TD in m BTOC): 8.920
Water Level Depth WL in m BTOC): 7.365
Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)
Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	6.87	1.590	19.16	3.25	99.8	7.428		
10	1.0	6.78	1.547	18.57	3.23	103.5	7.520		
15	1.5	6.80	1.558	19.20	3.15	89.6	7.580		
20	2.0	6.81	1.565	18.11	3.58	91.2	7.595		
25	2.5	6.80	1567	19.10	3.12	92.3	7.628		

Observations during purging (well condition, turbidity, colour, odour, sheen):
Slightly cloudy, brown tinge, slight hydrocarbon odour, slight sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☒ Same as purge method
☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION

Sample Name: MW02

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW03
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 26 /04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
Total Depth of Well (TD in m BTOC): 8.985	☐ Pump – Type: ☒ Submersible ☐ Peristaltic ☐ Other
Water Level Depth WL in m BTOC): 7.300	**PUMP INTAKE SETTING**
Number of well volumes to be purged (# VOLS) ☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other	Depth (m BTOC) Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25 mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	7.94	1.710	22.33	5.82	102.3	7.425		
10	1.0	7.85	2.200	79.39	5.22	101.4	7.520		
15	1.5	7.72	1.899	18.88	5.01	101.6	7.552		
20	2.0	7.70	1.905	19.13	4.74	99.2	7.560		
25	2.5	7.71	1.920	20.15	5.20	101.1	7.568		

Observations during purging (well condition, turbidity, colour, odour, sheen):
clear, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW03

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	3	unpreserved	12	
3	ml plastic	15	HNO_3	3	field filtered? [✓ Y] / N
2	ml VOA vials	6	HCl		
			H_2SO4	6	
			NaOH	3	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No
MW03	QW01				
MW03	QW02				

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW04
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 26 /04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
Total Depth of Well (TD in m BTOC): 9.078	☐ Pump – Type: ☒ Submersible ☐ Peristaltic ☐ Other
Water Level Depth WL in m BTOC): 7.155	**PUMP INTAKE SETTING**
Number of well volumes to be purged (# VOLS) ☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other	Depth (m BTOC) Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25 mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	7.55	1.629	18.03	4.62	88.7	7.250		
10	1.0	7.60	1.634	17.79	4.75	82.5	7.265		
15	1.5	7.61	1.640	17.20	4.65	85.3	7.320		
20	2.0	7.62	1.641	16.71	4.79	85.9	7.350		
25	2.5	7.60	1.642	17.25	4.68	85.2	7.355		

Observations during purging (well condition, turbidity, colour, odour, sheen): Slightly cloudy, ~~br~~ brown tinge, no odour or sheen Additional sample collected for lab QA

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW04

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	3	unpreserved	8	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI
Job Number: 20025.76
Recorded By: Z.Laughlan
Date: 26/04/2023

Well No: MW05
Well Type: ☒ Monitor ☐ Extractor ☐ Other
Well Material: ☒ PVC ☐ SS ☐ Other
Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other
Total Depth of Well (TD in m BTOC): 9.973
Water Level Depth WL in m BTOC): 6.415
Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)
Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25 min PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	6.35	1.756	18.45	4.23	93.6	6.595		
10	1.0	6.04	1.761	17.64	4.15	99.8	6.690		
15	1.5	6.05	1.763	17.34	4.38	99.9	6.725		
20	2.0	6.07	1.759	17.38	4.21	97.5	6.738		
25	2.5	6.06	1.760	17.32	4.28	98.2	6.750		

Observations during purging (well condition, turbidity, colour, odour, sheen):
clear, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☒ Same as purge method
☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW05

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original No	Duplicate No

Blank Samples

Type	Sample No
Rinsate	RB4
Rinsate	RB4

Other Samples

Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW06
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27/04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other
Total Depth of Well (TD in m BTOC): 8.972
Water Level Depth WL in m BTOC): 6.625
Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)
Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25 mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L
Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	6.85	0.653	17.07	3.54	100.8	6.685		
10	1.0	6.88	0.662	17.01	3.28	100.7	6.695		
15	1.5	6.87	0.660	16.95	3.01	101.2	6.702		
20	2.0	6.88	0.665	16.90	2.95	101.3	6.700		
25	2.5	6.90	0.668	16.28	2.78	101.2	6.750		

Observations during purging (well condition, turbidity, colour, odour, sheen):
LNAPL in well, 0.[illegible]m, LNAPL = [illegible]m, slightly cloudy, brown tinge, strong hydrocarbon odour and sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☒ Same as purge method
☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW06

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI
Job Number: 20025.76
Recorded By: Z.Laughlan
Date: 26/04/2023

Well No: MW07
Well Type: ☒ Monitor ☐ Extractor ☐ Other
Well Material: ☒ PVC ☐ SS ☐ Other
Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other
Total Depth of Well (TD in m BTOC): 9.187
Water Level Depth WL in m BTOC): 6.205
Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)
Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25min PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L
Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	6.78	1.005	17.00	5.27	103.0	6.485	~~6.480~~	
10	1.0	~~1.00~~ 6.66	0.913	16.72	5.12	103.0	6.582		
15	1.5	6.71	0.909	16.93	5.10	85.7	6.585		
20	2.0	6.70	0.910	16.87	4.95	73.5	6.620		
25	2.5	6.71	0.912	16.92	4.88	85.2	6.628		

Observations during purging (well condition, turbidity, colour, odour, sheen):
Slightly cloudy, no odour or sheen.

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☒ Same as purge method
☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW07

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples

Original No	Duplicate No

Blank Samples

Type	Sample No

Other Samples

Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW08
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 26 /04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
Total Depth of Well (TD in m BTOC):	☐ Pump – Type: ☒ Submersible ☐ Peristaltic ☐ Other
Water Level Depth WL in m BTOC):	**PUMP INTAKE SETTING**
Number of well volumes to be purged (# VOLS) ☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other	Depth (m BTOC) Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME________________PURGE RATE_______________ACTUAL PURGE VOLUME______________________

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
			Dry						

Observations during purging (well condition, turbidity, colour, odour, sheen):

____

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name:

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber		unpreserved		
3	ml plastic		HNO$_3$		field filtered? (Y) / N
2	ml VOA vials		HCl		

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW09
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 26/04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other

Total Depth of Well (TD in m BTOC): 8.075

Water Level Depth WL in m BTOC): 7.095

Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)

Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	7.66	1.113	14.12	3.58	80.9	7.128		
10	1.0	7.28	1.025	14.18	3.25	80.5	7.250		
15	1.5	7.16	0.948	15.20	3.18	80.2	7.265		
20	2.0	7.17	1.002	15.10	3.28	80.1	7.280		
25	2.5	7.18	1.105	15.25	3.30	80.1	7.285		

Observations during purging (well condition, turbidity, colour, odour, sheen):
Brown, turbid, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☒ Same as purge method

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION

Sample Name: MW09

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples			Blank Samples			Other Samples	
Original No	Duplicate No		Type	Sample No		Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW10
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27/04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
Total Depth of Well (TD in m BTOC): 8.014	☐ Pump – Type: ☒ Submersible ☐ Peristaltic ☐ Other
Water Level Depth WL in m BTOC): 4.295	**PUMP INTAKE SETTING**
Number of well volumes to be purged (# VOLS) ☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other	Depth (m BTOC) Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	7.05	0.691	15.53	3.68	69.5	4.328		
10	1.0	7.20	0.557	17.18	3.92	66.8	4.339		
15	1.5	7.28	0.560	16.94	3.71	67.0	4.360		
20	2.0	7.29	0.548	17.40	3.65	67.0	4.375		
25	2.5	7.28	0.549	17.25	3.60	67.1	4.401		

Observations during purging (well condition, turbidity, colour, odour, sheen):
Slightly cloudy, brown tinge, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name:

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	3	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples			Blank Samples			Other Samples	
Original No	Duplicate No		Type	Sample No		Type	Sample No
			RB4 Rinsate	RB5			
			RB4 Rinsate	RB5			

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW12
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 26 /04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other

Total Depth of Well (TD in m BTOC): 8.965

Water Level Depth WL in m BTOC): 5.535

Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)

Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25 mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	5.94	1.093	17.58	3.92	105.2	5.550		
10	1.0	5.98	1.118	17.33	3.58	106.4	5.628		
15	1.5	6.02	1.117	17.24	3.85	101.8	5.750		
20	2.0	6.01	1.118	17.39	3.72	101.7	5.768		
25	2.5	6.00	1.117	17.35	3.68	101.9	5.795		

Observations during purging (well condition, turbidity, colour, odour, sheen):
Cloudy, brown, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method
☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION

Sample Name: MW12

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW13
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 26 /04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other

Total Depth of Well (TD in m BTOC): 9.026

Water Level Depth WL in m BTOC): 4.645

Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)

Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	7.78	0.897	18.40	3.58	73.0	4.720		
10	1.0	7.66	0.896	18.05	3.74	80.3	4.828		
15	1.5	7.55	0.894	17.90	3.85	79.1	4.920		
20	2.0	7.55	0.897	17.76	3.98	81.2	4.980		
25	2.5	7.56	0.898	17.80	3.88	79.2	4.985		

Observations during purging (well condition, turbidity, colour, odour, sheen): Slighty cloudy, brown, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW13

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW101
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27 /04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
Total Depth of Well (TD in m BTOC): 7.505	☐ Pump – Type: ☒ Submersible ☐ Peristaltic ☐ Other
Water Level Depth WL in m BTOC): 4.775	**PUMP INTAKE SETTING**
Number of well volumes to be purged (# VOLS) ☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other	Depth (m BTOC) Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25 mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	7.19	1.815	17.82	3.95	107.1	4.820		
10	1.0	7.15	1.795	17.65	3.85	107.2	4.835		
15	1.5	7.10	1.785	17.28	3.72	107.1	4.882		
20	2.0	7.09	1.782	17.30	3.65	107.5	4.896		
25	2.5	7.08	1.780	17.21	3.54	107.2	4.905		

Observations during purging (well condition, turbidity, colour, odour, sheen):
Slightly cloudy, brown tinge, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW101

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW102
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27/04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
Total Depth of Well (TD in m BTOC): 7.905	☐ Pump – Type: ☒ Submersible ☐ Peristaltic ☐ Other
Water Level Depth WL in m BTOC): 3.995	**PUMP INTAKE SETTING**
Number of well volumes to be purged (# VOLS) ☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other	Depth (m BTOC) Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	7.72	1.654	21.16	4.21	123.3	4.025		
10	1.0	7.44	2.036	18.39	4.09	120.6	4.038		
15	1.5	7.45	2.043	17.84	4.15	117.6	4.045		
20	2.0	7.42	2.028	18.06	4.25	112.8	4.047		
25	2.5	7.43	2.032	18.12	4.12	116.2	4.050		

Observations during purging (well condition, turbidity, colour, odour, sheen):
Slightly cloudy, brown tinge, no odour or sheen.

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☒ Same as purge method

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW102

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples	
Original No	Duplicate No

Blank Samples	
Type	Sample No

Other Samples	
Type	Sample No

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consulting

Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: MW103
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27/04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other

Total Depth of Well (TD in m BTOC): 8.860

Water Level Depth WL in m BTOC): [illegible]

Number of well volumes to be purged (# VOLS) 5.850
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)

Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME 25mins PURGE RATE 4.0L ACTUAL PURGE VOLUME 2.5L

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
5	0.5	7.20	1.618	19.65	3.95	107.6	5.980		
10	1.0	7.16	1.595	19.25	3.28	107.1	5.995		
15	1.5	7.15	1.593	19.14	3.21	106.5	6.005		
20	2.0	7.16	1.598	19.17	3.16	106.2	6.025		
25	2.5	7.17	1.601	19.05	3.11	106.7	6.035		

Observations during purging (well condition, turbidity, colour, odour, sheen): slighty cloudy, brown tinge, no odour or sheen

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☒ Same as purge method

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: MW103

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	5	
3	ml plastic	9	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	4	HCl	1	
			H_2SO_4	5	
			NaOH	1	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: SW01
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27/04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME	PURGE METHOD
Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other	☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
Total Depth of Well (TD in m BTOC): /	☐ Pump – Type: ☒ Submersible ☐ Peristaltic ☐ Other
Water Level Depth WL in m BTOC): /	**PUMP INTAKE SETTING**
Number of well volumes to be purged (# VOLS) ☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other	Depth (m BTOC) Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME________ PURGE RATE________ ACTUAL PURGE VOLUME________

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
/	/	7.29	0.279	17.36	3.53	83.3	/		

Observations during purging (well condition, turbidity, colour, odour, sheen): clear, no odour or sheen.

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☒ Same as purge method

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION Sample Name: [illegible]

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	4 1	unpreserved	2	
3	ml plastic	2 2	HNO_3	2	field filtered? [✓ Y] / [✓ N]
2	ml VOA vials	2 2	HCl		
			H_2SO_4	2	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

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Ground Water Sampling Sheet

Job Name: Supplementary DSI	Well No: SW02
Job Number: 20025.76	Well Type: ☒ Monitor ☐ Extractor ☐ Other
Recorded By: Z.Laughlan	Well Material: ☒ PVC ☐ SS ☐ Other
Date: 27 /04/2023	Sample by: Z Laughlan

PURGING

PURGE VOLUME

Well Diameter (D in mm): ☒ 50 ☐ 100 ☐ Other

Total Depth of Well (TD in m BTOC):

Water Level Depth WL in m BTOC):

Number of well volumes to be purged (# VOLS)
☐ 3 ☐ 4 ☐ 5 ☐ 10 ☐ Other

PURGE METHOD

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other
☐ Pump – Type: ☒ Submersible ☐ Peristaltic
☐ Other

PUMP INTAKE SETTING

Depth (m BTOC)

Screen Interval (m BTOC) – Top : Bottom:

PURGE TIME

PURGE TIME________________PURGE RATE________________ACTUAL PURGE VOLUME________________

Start: Stop: Elapsed: Initial: Final:

FIELD PARAMETER MEASUREMENTS

Min since purge began	Volume Purged (L)	pH	Cond. (mS/cm)	Temp (°C)	DO (mg/L)	Redox (mV)	SWL (mBTOC)	Other (e.g. observations)	
/	/	7.62	0.393	17.98	3.21	99.1	/		

Observations during purging (well condition, turbidity, colour, odour, sheen):

Discharge water disposal: ☐ Drums ☐ Sanitary sewer ☐ Storm sewer ☐ Surface ☒ Other

SAMPLING

SAMPLING METHOD

☒ Same as purge method

☐ Bailer – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

☐ Pump – Type: ☐ PVC ☐ SS ☐ Teflon ☐ Other

SAMPLE DISTRIBUTION

Sample Name: SW02

Bottles:	Vol/Cont.	Analysis	Preservatives	Lab	Comments
1	ml Amber	1	unpreserved	2	
3	ml plastic	3	HNO_3	2	field filtered? [✓ Y] / N
2	ml VOA vials	2	HCl		
			H_2SO_4	2	

QUALITY CONTROL SAMPLES

Duplicate Samples		Blank Samples		Other Samples	
Original No	Duplicate No	Type	Sample No	Type	Sample No

Equipment Calibration Report

HAN Water Quality Meter 98194-4M– Serial No. 0404000101

pH	☑ pH 6.86	Actual: 6.85
Conductivity	☑ 5,000 uS/cm	Actual: 5045
Dissolved oxygen	☑ 0.0 mg/L	Actual: 0.0
Redox Potential	☑ 240 mV	Actual: 240.1

Temperature, (i.e. Room temperature): 21.20

Calibrated by: ZL

Date tested: 26.4.23

Job Reference: 20025.76

Notes:

Equipment Calibration Report

HAN Water Quality Meter 98194-4M– Serial No. 0404000101

pH	☑ pH 6.86	Actual: 6.85
Conductivity	☑ 5,000 uS/cm	Actual: 5036
Dissolved oxygen	☑ 0.0 mg/L	Actual: 0.0
Redox Potential	☑ 240 mV	Actual: 240.2

Temperature, (i.e. Room temperature): 13.44

Calibrated by: ZL

Date tested: 27.4.23

Job Reference: 20025.76

Notes:

From: Bryce Roberts
To: zac@cavvanba.com
Cc: Matt Carroll; Matt Jordan
Subject: Survey Goulburn Braidwood RD
Date: Thursday, 27 April 2023 2:48:50 PM
Attachments: image001.png

Hi Zac

See below for pickups done on the 27th of April 2023 at Braidwood Rd Goulburn

Points	Easting	Northing	RL
MW103 TOC	748169.109	6148849.532	636.403
MW103 Top concrete pad	748169.146	6148849.717	635.531
MW102 TOC	748172.125	6148890.020	634.400
MW102 Top of lid	748172.175	6148890.039	634.595
MW101 TOC	748176.837	6148919.963	635.133
MW101 top of lid	748176.871	6148919.936	635.293

TOC = Top of pipe (which im assuming is the top of casing)

If you have any questions let me know

Cheers

Bryce Roberts

A: 1A/10 Exchange Parade, Smeaton Grange 2567
E: Bryce.Roberts@rcsurveys.com.au
W: www.rcsurveys.com.au

Appendix D

Borehole and Testpit Logs

Borehole Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand Auger**

Hole ID. **BH101**
Project Number: **20025.76**
Hole Depth: **0.50 m**

CAVVANBA consulting

Date Started: **18/04/2023**
Date Completed: **18/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples	
									PID ppm	ID No.	Observations / Comments
							Surface: Grass				
HA		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark grey / light grey, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	BH101_0.0-0.1	
		0.50		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH101_0.3-0.4	Ash, glass.
		1 2					**Terminated at 0.50 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

REUMAD
Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **18/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Borehole Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand Auger**

Hole ID. **BH102**
Project Number: **20025.76**
Hole Depth: **0.30 m**

CAVVANBA consulting

Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
HA		0.20		▨	F	Fill	**FILL** - Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, with sub-angular gravel, rootlets.	moist	0.0	BH102_0.0-0.1	
		0.30		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH102_0.2-0.3	Ash.
		1 2					**Terminated at 0.30 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining. No anthropogenic material.

REUMAD

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Borehole Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand Auger**

Hole ID. **BH103**
Project Number: **20025.76**
Hole Depth: **0.40 m**

Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

CAVVANBA consulting

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
HA		0.20		▨	F	Fill	**FILL** - Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, with sub-angular gravel, rootlets.	moist	0.0	BH103_0.0-0.1	
		0.30		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH103_0.2-0.3	Ash.
		0.40		▨	CL	Nat.	**Sandy CLAY** - soft, low plasticity, fine to medium grained sand.	moist			
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Borehole Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand Auger**

Hole ID. **BH104**
Project Number: **20025.76**
Hole Depth: **0.50 m**

Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
HA		0.20		▨	F	Fill	**FILL** - Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, with sub-angular gravel, rootlets.	moist	0.0	BH104_0.0-0.1	
		0.50		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH104_0.3-0.4	ACM at 0.4m, glass, brick.
		1 2					**Terminated at 0.50 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining. Layered ACM identified from 0.4 m to the maximum depth of investigation.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Borehole Log

Project Name:	**Supplementary Detailed Site Investigation**	Hole ID.	**BH105**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**	Project Number:	**20025.76**
Client:	**Australian Rail Track Corporation**	Hole Depth:	**0.40 m**
Contractor:	**N/A**		
Method:	**Hand Auger**		

Date Started:	**19/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**19/04/2023**	Easting:	----------
		Northing:	----------
Sheet:	**1 of 1**	Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
HA		0.40		▨	F	Fill	**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0 0.0	BH105_0.0-0.1 QS105, QS106 BH105_0.3-0.4	Glass, ash.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Borehole Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand Auger**

Hole ID. **BH106**
Project Number: **20025.76**
Hole Depth: **0.40 m**

Date Started: **20/04/2023**
Date Completed: **20/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
HA		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH106_0.0-0.1	Glass, metal.
		0.40		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH106_0.3-0.4	Ash.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **20/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Borehole Log

Project Name:	**Supplementary Detailed Site Investigation**	Hole ID.	**BH107**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**	Project Number:	**20025.76**
Client:	**Australian Rail Track Corporation**	Hole Depth:	**0.40 m**
Contractor:	**N/A**		
Method:	**Hand Auger**		

Date Started:	**20/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**20/04/2023**	Easting:	----------
		Northing:	----------
Sheet:	**1 of 1**	Zone:	----------

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Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Gravel				
HA		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH107_0.0-0.1	Glass, metal.
		0.40		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH107_0.3-0.4	Ash.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

REUMAD

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By:	**Zac Laughlan**	Date:	**20/04/2023**
Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Borehole Log

Project Name:	**Supplementary Detailed Site Investigation**	Hole ID.	**BH108**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**	Project Number:	**20025.76**
Client:	**Australian Rail Track Corporation**	Hole Depth:	**0.40 m**
Contractor:	**N/A**		
Method:	**Hand Auger**		

Date Started:	**20/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**20/04/2023**	Easting:	----------
		Northing:	----------
Sheet:	**1 of 1**	Zone:	----------

CAVVANBA consulting

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Gravel				
HA		0.20		▨	F	Fill	**FILL** - Sandy Gravel, light brown / grey, loose, sub-angular gravel, fine to medium grained sand.	dry	0.0	BH108_0.0-0.1	
		0.40		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH108_0.3-0.4	Ash.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**20/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Borehole Log

Project Name:	**Supplementary Detailed Site Investigation**	Hole ID.	**BH109**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**	Project Number:	**20025.76**
Client:	**Australian Rail Track Corporation**	Hole Depth:	**0.40 m**
Contractor:	**N/A**		
Method:	**Hand Auger**		

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Date Started:	**20/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**20/04/2023**	Easting:	----------
Sheet:	**1 of 1**	Northing:	----------
		Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Gravel				
HA		0.30		▨	F	Fill	FILL - Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, rootlets.	dry	0.0	BH109_0.0-0.1 QS111, QS112	
		0.40		▨	F		FILL - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH109_0.3-0.4	Slag, coal fragments, ash.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**20/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Borehole Log

Project Name:	**Supplementary Detailed Site Investigation**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client:	**Australian Rail Track Corporation**
Contractor:	**N/A**
Method:	**Hand Auger**

Hole ID.	**BH110**
Project Number:	**20025.76**
Hole Depth:	**0.40 m**

Date Started:	**20/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**20/04/2023**	Easting:	----------
		Northing:	----------
Sheet:	**1 of 1**	Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Gravel				
HA		0.40		▨	F	Fill	**FILL** - Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, with sub-angular gravel.	moist	0.0 0.0	BH110_0.0-0.1 BH110_0.3-0.4	Metal, brick.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**20/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Borehole Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand Auger**

Hole ID. **BH111**
Project Number: **20025.76**
Hole Depth: **0.40 m**

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Date Started: **20/04/2023**
Date Completed: **20/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
HA		0.30		▨	F	Fill	**FILL** - Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, rootlets.	slightly moist	0.0	BH111_0.0-0.1	
		0.40		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	BH111_0.3-0.4	Ash, metal, brick.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

REUMAD Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

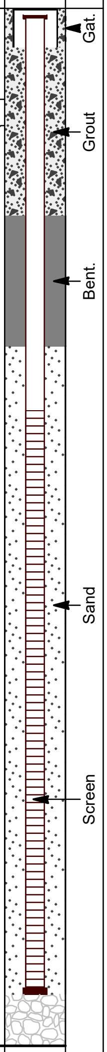
Logged By: **Zac Laughlan** Date: **20/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Monitoring Well Log

Project Name:	**Supplementary Detailed Site Investigation**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client:	**Australian Rail Track Corporation**
Contractor:	**BG Drilling Pty Ltd**
Method:	**Hand Auger, Solid Flight Auger**
Rig Type:	**Christie Rig 27**
Date Started:	**19/04/2023**
Date Completed:	**19/04/2023**
Sheet:	**1 of 1**
Ground Level (mAHD):	----------
Easting:	----------
Northing:	----------
Zone:	----------
Hole ID.	**MW101**
Project Number:	**20025.76**
Hole Depth:	**8.00 m**

CAVVANBA consulting

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples PID ppm	Samples ID No.	Observations / Comments
							Surface: Grass				
HA		0.70		▨	F	Fill	**FILL** - Sandy Clay, brown, soft, low plasticity, fine to medium grained sand, some sub-angular gravel, rootlets.	moist	0.0 0.0	MW101_0.0-0.1 MW101_0.5-0.6	Concrete pieces.
SFA		0.90		▨	F	Fill	**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	MW101_0.8-0.9	Metal, ash.
		5.00		▨	CL	Natural	**Silty CLAY** - dark brown, soft, low plasticity, homogeneous. Clay becoming hard at 2.5m.	moist	0.0	MW101_2.5-2.6	
	▽	7.00		▨	CL	Natural	**Sandy CLAY** - light brown, mottled grey, stiff, medium plasticity, fine to medium grained sand, homogenous.	moist wet	0.0	MW101_5.0-5.1	
		8.00		▨	CL	Natural	**Silty CLAY** - light brown, stiff, medium plasticity, fine to medium grained sand, with fine sub-rounded gravel.	sat'd	0.0	MW101_7.0-7.1	
							Terminated at 8.00 m Target depth.				



Abandonment Method: Install monitoring well.

Additional Comments: No odour or staining.
Well developed by bailer 21/04/2023.

Encountered Groundwater Level (m BGL)	▽	6.500
Stabilised Groundwater Level (m BGL)	▼	

REUMAD

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**19/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Monitoring Well Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **BG Drilling Pty Ltd**
Method: **Hand Auger, Solid Flight Auger** Rig Type: **Christie Rig 27**

Hole ID. **MW102**
Project Number: **20025.76**
Hole Depth: **8.00 m**

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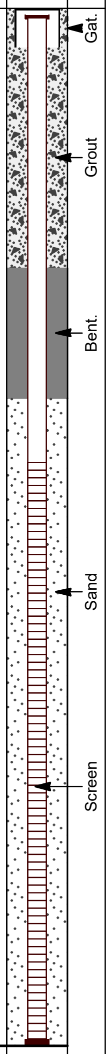
Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples PID ppm	Samples ID No.	Observations / Comments
							Surface: Grass				
HA		0.20			F	Fill	**FILL** - Sandy Gravel, light brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	dry	0.0	MW102_0.0-0.1	
		0.80			F		**FILL** - Sandy Clay, dark brown, soft, low plasticity, fine to medium grained sand, with sub-angular gravel.	moist	0.0	MW102_0.5-0.6	
SFA		1			CL	Natural	**Silty CLAY** - light brown, mottled grey, stiff, medium plasticity, homogeneous.	moist	0.0	MW102_1.2-1.3	
		2							0.0	MW102_2.0-2.1	
		3							0.0	MW102_3.0-3.1	
		4							0.0	MW102_4.0-4.1	
		5							0.0	MW102_5.0-5.1	
		6							0.0	MW102_6.0-6.1	
	▽	7.00			CL		**CLAY** - light brown, soft, homogeneous.	sat'd	0.0	MW102_7.0-7.1	
		8.00									
							Terminated at 8.00 m Target depth.				

Well Details / Well Construction



Abandonment Method: Install monitoring well.

Additional Comments: No odour or staining. No anthropogenic material.
Well developed by bailer 21/04/2023.

Encountered Groundwater Level (m BGL) ▽ 7.000
Stabilised Groundwater Level (m BGL) ▼

REUMAD Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Monitoring Well Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **BG Drilling Pty Ltd**
Method: **Hand Auger, Solid Flight Auger** Rig Type: **Christie Rig 27**

Hole ID. **MW103**
Project Number: **20025.76**
Hole Depth: **8.00 m**

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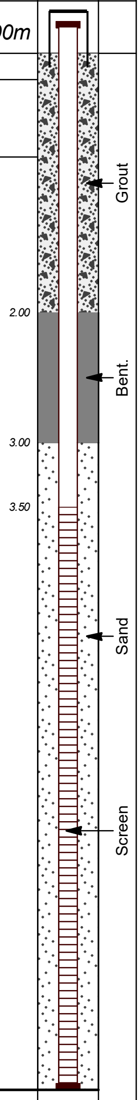
Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples PID ppm	Samples ID No.	Observations / Comments
											Stickup = 0.90m
HA		0.20			F	Fill	**FILL** - Sandy Gravel, light brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0 1.2	MW103_0.0-0.1 MW103_0.2-0.3	Slight hydrocarbon (diesel) odour.
		0.80			F		**FILL** - Sandy Gravel, light grey, loose, sub-angular gravel, fine to medium grained sand.	slightly moist	1.3	MW103_0.5-0.6	
		1 1.20			CL		**Silty CLAY** - light brown, stiff, medium plasticity, with sub-angular gravel, homogeneous.	moist			
SFA		2 3 4 5 6			CL	Natural	**Silty CLAY** - dark brown, soft, medium plasticity, homogeneous. Clay becoming stiff at 1.5m, moisture decreasing.	very moist	0.0 0.0 0.0 0.0 0.0 0.0	MW103_1.2-1.3 MW103_2.0-2.1 MW103_3.0-3.1 MW103_4.0-4.1 MW103_5.0-5.1 MW103_6.0-6.1	
	∇	7 8.00						sat'd	0.0	MW103_7.0-7.1	
							Terminated at 8.00 m Target depth.				



Abandonment Method: Install monitoring well.

Additional Comments: No anthropogenic material.
Well developed by bailer 21/04/2023.

Encountered Groundwater Level (m BGL) ∇ 6.500
Stabilised Groundwater Level (m BGL) ▼

REUMAD

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

CCLOG2023 20025_76 GOULBURN.GPJ CC.GDT 6/22/23 11:35:29 AM - drawn by laurie white at www.reumad.com.au

Test Pit Log

Project Name:	**Supplementary Detailed Site Investigation**	Hole ID.	**TP101**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**	Project Number:	**20025.76**
Client:	**Australian Rail Track Corporation**	Hole Depth:	**0.50 m**
Contractor:	**N/A**		
Method:	**Hand**		

Date Started:	**18/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**18/04/2023**	Easting:	----------
		Northing:	----------
Sheet:	**1 of 1**	Zone:	----------

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Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.30		▨	F	Fill	**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP101_0.0-0.1	
		0.50		▨	F		**FILL** - Sandy Gravel, black, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP101_0.3-0.4	Ash.
		1 2					**Terminated at 0.50 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**18/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Test Pit Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand**

Hole ID. **TP102**
Project Number: **20025.76**
Hole Depth: **0.40 m**

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Date Started: **18/04/2023**
Date Completed: **18/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP102_0.0-0.1	Metal pins.
		0.40		▨	CL	Natural	**CLAY** - light brown, soft, low plasticity, homogeneous.	moist	0.0	TP102_0.3-0.4	
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

REUMAD

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **18/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Test Pit Log

Project Name:	**Supplementary Detailed Site Investigation**	Hole ID.	**TP103**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**	Project Number:	**20025.76**
Client:	**Australian Rail Track Corporation**	Hole Depth:	**0.40 m**
Contractor:	**N/A**		
Method:	**Hand**		

Date Started:	**18/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**18/04/2023**	Easting:	----------
		Northing:	----------
Sheet:	**1 of 1**	Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples PID ppm	Samples ID No.	Observations / Comments
							Surface: Grass				
Hand		0.20			F	Fill	**FILL** - Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP103_0.0-0.1	Tile, metal, pins.
		0.40			CL	Natural	**Sandy CLAY** - light brown, soft, low plasticity, fine to medium grained sand, homogeneous.	moist	0.0	TP103_0.3-0.4	
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**18/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Test Pit Log

Project Name:	**Supplementary Detailed Site Investigation**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client:	**Australian Rail Track Corporation**
Contractor:	**N/A**
Method:	**Hand**

Hole ID.	**TP104**
Project Number:	**20025.76**
Hole Depth:	**0.40 m**

Date Started:	**18/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**18/04/2023**	Easting:	----------
Sheet:	**1 of 1**	Northing:	----------
		Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP104_0.0-0.1	Metal pins.
		0.30		▨	F		**FILL** - Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP104_0.2-0.3	
		0.40		▨	CL	Nat.	**Sandy CLAY** - light brown, soft, low plasticity, fine to medium grained sand, homogeneous.	moist	0.0	TP104_0.3-0.4	
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**18/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Test Pit Log

Project Name:	**Supplementary Detailed Site Investigation**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client:	**Australian Rail Track Corporation**
Contractor:	**N/A**
Method:	**Hand**

Date Started:	**18/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**18/04/2023**	Easting:	----------
		Northing:	----------
Sheet:	**1 of 1**	Zone:	----------

Hole ID.	**TP105**
Project Number:	**20025.76**
Hole Depth:	**0.60 m**

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Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.30		▨	F	Fill	**FILL** - Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP105_0.0-0.1	
		0.50		▨	F		**FILL** - Sandy Gravel, dark grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP105_0.3-0.4	Ash.
		0.60		▨	CL	Nat.	**Sandy CLAY** - light brown, mottled grey, soft, low plasticity, fine to medium grained sand, homogeneous.	moist			
		1 2					**Terminated at 0.60 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

REUMAD

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**18/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Test Pit Log

Project Name:	**Supplementary Detailed Site Investigation**	Hole ID.	**TP106**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**	Project Number:	**20025.76**
Client:	**Australian Rail Track Corporation**	Hole Depth:	**0.40 m**
Contractor:	**N/A**		
Method:	**Hand**		

Date Started:	**18/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**18/04/2023**	Easting:	----------
Sheet:	**1 of 1**	Northing:	----------
		Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.30		▨	F	Fill	**FILL** - Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP106_0.0-0.1	
		0.40		▨	F		**FILL** - Sandy Gravel, dark grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP106_0.3-0.4	Ash.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**18/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Test Pit Log

Project Name:	**Supplementary Detailed Site Investigation**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client:	**Australian Rail Track Corporation**
Contractor:	**N/A**
Method:	**Hand**

Hole ID.	**TP107**
Project Number:	**20025.76**
Hole Depth:	**0.50 m**

Date Started:	**18/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**18/04/2023**	Easting:	----------
Sheet:	**1 of 1**	Northing:	----------
		Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.30			F	Fill	**FILL** - Sandy Gravel, dark brown / black, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP107_0.0-0.1	Metal.
		0.50			CL	Natural	**Sandy CLAY** - light brown / dark brown, soft, low plasticity, fine to medium grained sand, homogeneous.	moist	0.0	TP107_0.3-0.4	
		1 2					**Terminated at 0.50 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**18/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Test Pit Log

Project Name:	**Supplementary Detailed Site Investigation**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client:	**Australian Rail Track Corporation**
Contractor:	**N/A**
Method:	**Hand**

Hole ID.	**TP108**
Project Number:	**20025.76**
Hole Depth:	**0.50 m**

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Date Started:	**19/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**19/04/2023**	Easting:	----------
		Northing:	----------
Sheet:	**1 of 1**	Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.30		▨	F	Fill	**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP108_0.0-0.1	Glass, coal fragments.
		0.50		▨	CL	Nat.	**Sandy CLAY** - light brown, soft, low plasticity, fine to medium grained sand, homogeneous.	moist	0.0	TP108_0.3-0.4	
							Terminated at 0.50 m Target depth.				
		1									
		2									

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

CCLOG2023 20025_76 GOULBURN.GPJ CC.GDT 6/22/23 11:35:44 AM - drawn by laurie white at www.reumad.com.au

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Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**19/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Test Pit Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand**

Hole ID. **TP109**
Project Number: **20025.76**
Hole Depth: **0.60 m**

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Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples PID ppm	 ID No.	Observations / Comments
							Surface: Grass				
Hand		0.50		▨	F	Fill	**FILL** - Sandy Gravel, dark grey, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP109_0.0-0.1	ACM, metal pins, brick, glass.
		0.60		▨	F		**FILL** - Sandy Gravel, dark brown / white, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP109_0.5-0.6	Ash.
		1 2					**Terminated at 0.60 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining. 13g ACM x 1 piece.

CCLOG2023 20025_76 GOULBURN.GPJ CC.GDT 6/22/23 11:35:45 AM - drawn by laurie white at www.reumad.com.au

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Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Test Pit Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand**

Hole ID. **TP110**
Project Number: **20025.76**
Hole Depth: **0.40 m**

CAVVANBA consulting

Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP110_0.0-0.1	Metal fragments.
		0.40		▨	F		**FILL** - Sandy Gravel, dark grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP110_0.3-0.4	
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

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Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

CCLOG2023 20025_76 GOULBURN.GPJ CC.GDT 6/22/23 11:35:47 AM - drawn by laurie white at www.reumad.com.au

Test Pit Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand**

Hole ID. **TP111**
Project Number: **20025.76**
Hole Depth: **0.40 m**

Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP111_0.0-0.1	Glass.
		0.40		▨	F		**FILL** - Sandy Gravel, dark grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP111_0.3-0.4	
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Test Pit Log

Project Name:	**Supplementary Detailed Site Investigation**	Hole ID.	**TP112**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**	Project Number:	**20025.76**
Client:	**Australian Rail Track Corporation**	Hole Depth:	**0.40 m**
Contractor:	**N/A**		
Method:	**Hand**		

Date Started:	**19/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**19/04/2023**	Easting:	----------
		Northing:	----------
Sheet:	**1 of 1**	Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown / light grey, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP112_0.0-0.1	Glass, plastic fragments, ash.
		0.40		▨	F		**FILL** - Sandy Gravel, dark grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP112_0.3-0.4	Ash.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**19/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Test Pit Log

Project Name:	**Supplementary Detailed Site Investigation**	Hole ID.	**TP113**
Location / Site:	**Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**	Project Number:	**20025.76**
Client:	**Australian Rail Track Corporation**	Hole Depth:	**0.60 m**
Contractor:	**N/A**		
Method:	**Hand**		

Date Started:	**19/04/2023**	Ground Level (mAHD):	----------
Date Completed:	**19/04/2023**	Easting:	----------
Sheet:	**1 of 1**	Northing:	----------
		Zone:	----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP113_0.0-0.1	
		0.60		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP113_0.4-0.5	ACM present 0.4-0.5m. Ash from 0.4m.
		1 2					**Terminated at 0.60 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining. Multiple ACM fragments identified (< 10) to be intermixed with ash fill material from 0.4 m to 0.5 m.

Log Drawn By:	Laurie White	Logged By:	**Zac Laughlan**	Date:	**19/04/2023**
Contact:	laurie.white@reumad.com.au	Checked By:	**Zac Laughlan**	Date:	**22/06/2023**

Test Pit Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand**

Hole ID. **TP114**
Project Number: **20025.76**
Hole Depth: **0.50 m**

Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.30		▨	F	Fill	**FILL** - Sandy Sand, light brown, loose, fine to medium grained sand.	dry	0.0	TP114_0.0-0.1	Timber, ballast, glass.
		0.50		▨	F		**FILL** - Sandy Gravelly Clay, dark brown, soft, sub-angular gravel, fine to medium grained sand.	slightly moist	0.0	TP114_0.3-0.4	
		1 2					**Terminated at 0.50 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Test Pit Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand**

Date Started: **19/04/2023**
Date Completed: **19/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Hole ID. **TP115**
Project Number: **20025.76**
Hole Depth: **0.50 m**

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, brown / dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	moist	0.0	TP115_0.0-0.1	
		0.50		▨	F		**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP115_0.3-0.4	Ash.
		1 2					**Terminated at 0.50 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **19/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Test Pit Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand**

Hole ID. **TP116**
Project Number: **20025.76**
Hole Depth: **0.40 m**

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Date Started: **20/04/2023**
Date Completed: **20/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples PID ppm	 ID No.	Observations / Comments
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand, rootlets.	dry	0.0	TP116_0.0-0.1	
		0.40		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP116_0.3-0.4	Ash.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **20/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

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Test Pit Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand**

Hole ID. **TP117**
Project Number: **20025.76**
Hole Depth: **0.40 m**

Date Started: **20/04/2023**
Date Completed: **20/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples		Observations / Comments
									PID ppm	ID No.	
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, dark brown, loose, sub-angular gravel, fine to medium grained sand.	slightly moist	0.0	TP117_0.0-0.1 QS109, QS110	Slag.
		0.40		▨	F		**FILL** - Sandy Gravelly Clay, dark brown, mottled orange, soft, low plasticity, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP117_0.3-0.4	Ash.
		1 2					**Terminated at 0.40 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **20/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Test Pit Log

Project Name: **Supplementary Detailed Site Investigation**
Location / Site: **Goulburn Roundhouse, 12 Braidwood Rd, Goulburn NSW**
Client: **Australian Rail Track Corporation**
Contractor: **N/A**
Method: **Hand**

Hole ID. **TP118**
Project Number: **20025.76**
Hole Depth: **0.50 m**

Date Started: **20/04/2023**
Date Completed: **20/04/2023**
Sheet: **1 of 1**

Ground Level (mAHD): ----------
Easting: ----------
Northing: ----------
Zone: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Samples PID ppm	Samples ID No.	Observations / Comments
							Surface: Grass				
Hand		0.20		▨	F	Fill	**FILL** - Sandy Gravel, light brown, loose, sub-angular gravel, fine to medium grained sand.	slightly moist	0.0	TP118_0.0-0.1	
		0.50		▨	F		**FILL** - Sandy Gravel, dark brown / grey, loose, sub-angular gravel, fine to medium grained sand.	moist	0.0	TP118_0.3-0.4	Ash.
		1 2					**Terminated at 0.50 m** Target depth.				

Abandonment Method: Backfill with soil and compact.

Additional Comments: No odour or staining.

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Zac Laughlan** Date: **20/04/2023**
Checked By: **Zac Laughlan** Date: **22/06/2023**

Appendix E

Data Usability Assessment & Background To Data Usability

Data Usability Summary Assessment

A background to data usability is provided in this appendix. All site work was completed in accordance with standard Cavvanba sampling protocols, including a quality assurance/quality control (QA/QC) programme and standard operating procedures.

A data usability assessment was performed for the soil and groundwater data collected by Cavvanba, as summarised in the following tables:

- Table 1.1: Field QC samples summary,
- Table 1.2: Summary of field QA/QC, and
- Table 1.3: Summary of laboratory QA/QC.

This data usability assessment was conducted on laboratory batch number ES2313346, ES2313408, ES2313946 (primary – ALS), 984747-S and 985222-W (inter-laboratory – Eurofins).

Table 1.1: Field QC samples summary

	Total samples	Field duplicates [1]	Inter-lab duplicates [1]	Trip spike	Trip blank	Rinsate
Soil						
BTEXN	85	6 (7.06%)	6 (7.06%)	1	1	-
TRH C_6 – C_{10}	85	6 (7.06%)	6 (7.06%)	1	1	-
TRH C_{10} – C_{40}	85	6 (7.06%)	6 (7.06%)	-	-	-
Metals[2]	85	6 (7.06%)	6 (7.06%)	-	-	3
PAHs	85	6 (7.06%)	6 (7.06%)	-	-	-
Groundwater and Surface Water						
BTEXN	17	1 (5.88%)	1 (5.88%)	1	1	-
TRH C_6 – C_{10}	17	1 (5.88%)	1 (5.88%)	1	1	-
TRH C_{10} – C_{40}	17	1 (5.88%)	1 (5.88%)	-	-	-
Metals[2]	17	1 (5.88%)	1 (5.88%)	-	-	2
PAHs	17	1 (5.88%)	1 (5.88%)	-	-	-
VOCs	17	1 (5.88%)	1 (5.88%)	-	-	-
PFAS	17	1 (5.88%)	1 (5.88%)	-	-	-

Notes:
1. Shows number of duplicate samples collected and the percentage of total samples analysed.
2. Arsenic, cadmium, chromium, copper, lead, nickel, zinc and mercury.
   – = not applicable, as trip spike/blank analysed for volatile compounds only.

Table 1.2: Summary of field QA/QC

Parameter	Complies	Comments [1]
Precision		
Standard operating procedures (SOPs) appropriate and complied with	Yes	Sampling was conducted in accordance with Cavvanba standard field operating procedures. The sampling methods complied with industry standards and guidelines.

Parameter	Complies	Comments [1]
Field duplicates	Partial	RPD[2] criteria < 30% – 50%, frequency ≥ 5%. RPD exceedances were reported for chromium between the primary and intra-laboratory duplicate for soil. The frequency of field duplicates were within the acceptable range with the exception of PFAS for groundwater.
Inter-laboratory duplicates	Partial	RPD[2] criteria < 30% – 50%, frequency ≥ 5%. RPD exceedances were reported for chromium and cadmium between the primary and inter-laboratory duplicate in soil. The frequency of inter-laboratory duplicates were within the acceptable range with the exception of PFAS for groundwater.
Accuracy		
Matrix spikes samples appropriate	Partial	≥ 1/media type.
Representativeness		
Sample collection - preservation	Yes	All samples were collected directly into laboratory supplied containers with no headspace. All samples were placed immediately into eskies containing ice.
Sample collection - sample splitting	Yes	Duplicate samples were split in the field by filling each container collectively (i.e. co-collected).
Field equipment calibrated	Yes	PID and groundwater multi-parameter probe calibration records are included as an appendix to the report.
Decontamination procedures	Yes	Soil samples were collected either from the centre of the hand auger or directly from the shovel / trowel, ensuring the sampling equipment had been decontaminated between each location and a new pair of disposable gloves worn between sample collection. Groundwater samples were collected using single use disposable equipment. Decontamination of the interface probe and micro-purge pump was conducted between sampling each monitoring well. No other re-usable sampling equipment was used. The field sampler also wore new disposable nitrile gloves during sampling and between sample locations. No Teflon containing, or Teflon coated sample equipment was used during groundwater and surface water sampling.

Parameter	Complies	Comments [1]
Rinsate samples	Yes	Required ≥ 1/field batch, < LORs. Rinsate samples were collected from the trowel and micro-purge pump per day of sampling and submitted to the laboratory. Analytical results were reported below the laboratory LOR.
Trip blanks	Yes	≥ 1/field batch (volatiles), < LORs. Trip blanks were collected for all sample batches submitted to the laboratory. Analytical results were reported below the laboratory LOR.
Trip spikes	Yes	≥ 1/field batch (volatiles), 70 - 130%, (recovery) or ≤ 30 - 50% (RPDs). Trip spike samples were collected/analysed for all sample batches submitted to the laboratory. RPDs for were within acceptable limits.
Comparability		
Consistent sampling staff	Yes	All field work was completed Mr Zac Laughlan and Mr Cam Campbell of Cavvanba Consulting.
Consistent weather/field conditions	Yes	No extreme weather events were reported during, before or following the investigation.
Completeness		
Sample logs and field data	Yes	Standard field sampling sheets were used during the investigation.
Chain of Custody	Yes	-

Notes:

1. For QC samples, specified frequency and acceptance criteria shown.
2. RPD = relative percentage difference.

Table 1.3: Summary of laboratory QA/QC

Parameter	Complies	Notes [1]
Precision		
Laboratory duplicates	Partial	Laboratory specified RPD range, frequency ≥ 10%. Laboratory duplicate recoveries were within the laboratory specified global acceptance criteria with the exception of select metals in soils as reported by the primary laboratory. The frequency of laboratory duplicates was reported within the acceptable range with the exception of total mercury in soils and PAH/Phenols and semi volatile TRH fractions in water as reported by the primary laboratory.

Parameter	Complies	Notes [1]
Accuracy		
Surrogate spikes	Partial	Organics by GC, RPD criteria of 70% - 130%. Surrogate spike recoveries were within the laboratory specified global acceptance criteria with the exception of select phenols and PAHs in soils as reported by the primary laboratory. The frequency of surrogate spikes was within the acceptable range.
Matrix spikes analysis appropriate	Partial	RPD criteria of ≥ 70% - 130%. Matrix spike recoveries were within the laboratory specified global acceptance criteria with the exception of lead in soils and hexavalent chromium and methane in water as reported by the primary laboratory. The frequency of matrix spike analysis was reported within the acceptable range.
Laboratory control samples (LCSs)	Yes	RPD criteria of 70% - 130%, frequency of ≥ 1/lab batch Laboratory control sample recoveries were within the laboratory specified global acceptance criteria. The frequency of laboratory control samples was within the acceptable range.
Certified reference material (CRM)	n/a	-
Representativeness		
Sample condition	Yes	-
Holding times	Partial	An analysis holding time exceedance was reported for the trip spike soil sample within laboratory batch ES2313408 (intra-laboratory).
Laboratory blanks	Yes	≥ 1/lab batch, < LORs.
Comparability		
NATA accredited laboratory	Yes	ALS Environmental Pty Ltd is a NATA accredited laboratory (accreditation number 825). The inter-laboratory is also NATA accredited, Eurofins Scientific Pty Ltd (accreditation number 1261).
NEPM methods or similar	Yes	ALS and Eurofins describe their in-house laboratory methods are referenced from NEPC, ASTM and modified USEPA/APHA documents.
Limits of reporting (LORs) consistent and appropriate	Partial	The LOR for PFOS, hexavalent chromium, mercury and select PAHs compared to the adopted species protection level, and LOR for vinyl chloride compared to the drinking water criteria.

Parameter	Complies	Notes [1]
Completeness		
Sample receipt	Yes	-
Laboratory Reports	Yes	-

Notes:

1. For QC samples, acceptance criteria shown. Acceptance criteria can vary based on analyte, statistical data and laboratory specific methods. Laboratory specified relates to detected concentrations based on LORs, e.g. result < 10 x LOR = no limit, 10 – 20 x LOR = 0 - 50%, > 20 x LOR = 0 - 20%. See laboratory reports for specific details.

Summary and discussion

The following issues were identified with the data:

Precision

RPD exceedances were reported for soil between the primary sample and the intra- and inter-laboratory duplicates for cadmium and chromium. These exceedances are likely due to the inherent variability, and the resultant heterogeneity of the fill material sampled across the site. Additionally, the exceedances are associated with concentrations being reported only marginally above the limit of reporting, therefore only minor variations in concentrations result in exaggerated RPDs. These exceedances are not considered to detract from the precision of the dataset, nor affect the conclusions drawn within the report.

There were no RPD exceedances reported for groundwater between the primary sample and the intra- and inter-laboratory samples.

The frequency of the field and inter-laboratory duplicates for PFAS in water were reported slightly outside of the acceptable range of ≥ 10 %, in accordance with that stipulated in the PFAS NEMP. There were no anomalies or unexpected PFAS detections identified as part of the investigation. This minor frequency outlier is not considered to represent an actual uncertainty in the dataset, nor affect the conclusions drawn within the report. This is further evidenced by the quality of the data collected for primary COCs.

Laboratory duplicate RPD exceedances were reported for select metals in soils by the primary laboratory. It was reported that the RPD exceeded LOR based limits. These exceedances are not considered to detract from the overall precision of the dataset nor affect decision making.

Laboratory duplicate recovery frequencies were reported to be within the acceptable ranges with the exception of total mercury in soils and PAH/Phenols and semi-volatile TRH factions in water as reported by the primary laboratory. These frequency outliers are not considered to detract from the precision of the dataset.

There were no laboratory duplicate RPD exceedances or outliers reported by the secondary laboratory.

Accuracy

Matrix spike recoveries were unable to be determined for lead in soils, where the background level was greater than or equal to four times the spike level. Matrix spike recoveries were also outside of the laboratory specified acceptance criteria for methane and hexavalent chromium in water. The primary laboratory reported that the recovery of hexavalent chromium was less than the lower data quality objective and the background level for methane was greater than or equal to four times the spike level. However, in all cases an acceptable recovery was obtained for the laboratory control samples indicating sample matrix interference, which is considered by the laboratory to be a more appropriate indicator.

Surrogate spike outliers were reported for select phenols and PAHs in soils, where the recovery was less than the lower data quality objective.

The outliers reported above are not considered to affect the overall accuracy of the data and/or the conclusions drawn within the report.

Matrix spike recovery frequencies were reported to be within the acceptable ranges by both the primary and secondary laboratories.

Representativeness

A holding time exceedance was reported for BTEXN within the soil trip spike sample under laboratory batch ES2313408. All trip spike recoveries were reported within the within the specified RPDs. As such, this holding time exceedance is not considered to affect the representativeness of the data collected.

Trip blank results were reported below laboratory detection limits.

Concentrations of all rinsate samples collected during the investigation were reported below laboratory detection limits.

A PFAS trip blank sample was not collected for groundwater during the investigation. A trip blank is used to assess the representativeness of the dataset through bias via cross-contamination during handling and transport. There were no anomalies or unexpected detections identified as part of the investigation, and no indication that the sampling methodology has contributed to cross-contamination. This is further evidenced by the non-detect results in the dataset. The absence of a trip blank sample is not considered to affect the representativeness of the dataset or the conclusions drawn within the report.

There were no rinsate samples specific to PFAS collected as part of the investigation. Cavvanba notes that single use disposable sampling equipment was utilised for each sample location, and all reusable sampling equipment was thoroughly decontaminated by washing the equipment with Neutracon © / potable water solution. This is evidenced by the absence of detectable concentrations of COCs within the rinsate samples collected. The absence of a PFAS-specific rinsate sample is not considered to affect the representativeness of the dataset, nor affect the conclusions drawn within the report.

Comparability

The data is considered to be acceptable, with experienced sampling staff used, NATA accredited laboratories used and LORs below the relevant criteria. It is noted that the LOR for PFOS, hexavalent chromium, mercury, select PAHs and vinyl chloride are in excess of the adopted species protection levels / drinking water criteria. The significance of these are discussed within the body of the report.

Completeness

Laboratory and field documentation is considered to be complete.

Background to Data Usability

1.0 Introduction

Information generated from environmental investigations requires some statement in regard to the usability of the data[1], and therefore quality assurance (QA) and quality control (QC) are an integral part of the analysis and interpretation of environmental data. QA/QC used in contaminated sites investigations is briefly reviewed in this section.

Quality assurance involves all of the actions, procedures, checks and decisions undertaken to ensure the representativeness and integrity of samples, and accuracy and reliability of analytical results (NEPC as amended 2013). Quality control is the component of QA which monitors and measures the effectiveness of other procedures by the comparison of these measures to previously decided objectives.

There are various components of QA/QC which address the operation of the laboratories and the routine procedures conducted to achieve a minimum level of quality. Examples of QA components include sample control, data transfer, instrument calibration, staff training, etc. Examples of QC components include the measurement of samples to access the quality of reagents and standards, cleanliness of apparatus, accuracy and precision of methods and instruments, etc. Generally, the management of laboratory QA issues is addressed through accreditation by the National Association of Testing Authorities (NATA), or similar, and monitoring of these issues is not addressed on a project by project basis.

On a project specific basis, those involved in collecting, assessing or reviewing the relevant data should ensure the minimum level of QA is conducted. Appropriate numbers and types of QC samples should be collected and analysed, both field QC samples and laboratory QC samples. While minimum levels of QA/QC are specified in some guidelines, e.g. NSW EPA 1994, AS 4482.1-1997, NEPC as amended 2013, the minimum level required may vary between projects, based on site and project specific aspects. This means that the minimum specified requirements may not be sufficient for a particular project. As described in the NEPM (NEPC 1999):

> *As a general rule, the level of required QC is that which adequately measures the effects of all possible influences upon sample integrity, accuracy and precision, and is capable of predicting their variation with a high degree of confidence.*

2.0 PARCC parameters

Following receipt of laboratory analytical results, data validation is conducted to determine if the specified acceptance criteria have been met. This is conducted to ensure that all data, and subsequent decisions based on that data, are technically sound. Data quality is typically discussed in terms of precision, accuracy, representativeness, comparability and completeness. These are referred to as the PARCC parameters[2]. Field QA/QC and laboratory QC is described below within the PARCC framework.

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[1] To avoid confusion with the data quality objectives (DQOs) process, the term data usability is used rather than data quality.

[2] The PARCC parameters are sometimes referred to as data quality indicators (DQIs).

2.1 Precision

2.1.1 Duplicates

Precision is a measure of the reproducibility of results under a given set of conditions and is assessed on the basis of agreement between a set of duplicate results obtained from duplicate analyses. The precision of a duplicate determination is measured by comparing the difference between the two samples to the average of the two samples, expressed as a relative percentage difference (RPD).

The determination is:

RPD = (P-D)/(P+D/2) x 100

P = primary sample
D = duplicate sample

Three types of duplicates are commonly used:

- field duplicates are used to measure the precision of the sampling and analytical process;
- inter-laboratory duplicates are used to check on the analytical performance of the primary laboratory; and
- laboratory duplicates are used to measure the precision of the analytical process.

2.1.2 Field Duplicates

Field duplicates (or blind replicates) are collected from the same location and submitted to the laboratory for analyses, as a primary sample. The sample nomenclature is such that the laboratory is not aware which sample is a duplicate. The RPD is calculated to determine the degree of repeatability (precision) of results obtained from the duplicate analysis. Where results are below the practical quantification limit (PQLs) or limits of reporting (LORs), i.e. non-detects, RPDs cannot be calculated. Where one result is detected, the results are considered to conform when the detected result is less than five times the PQL/LOR.

The PQL/LOR is the lowest concentration of an analyte that can be determined with acceptable precision (repeatability) and accuracy under the test conditions. The PQL/LOR is usually calculated as five times the lower limit of detection (or method detection limit). However, adjustments in PQLs/LORs may be required due to interference from high contaminant concentrations.

As environmental samples can exhibit a high degree of heterogeneity, field duplicates often exceed the acceptance criterion, particularly if the samples are co-collected, for example, because of the potential for losing volatiles during sample splitting. It is generally accepted that before results which fail the acceptance criterion are described as due to low concentrations or sample heterogeneity, the sample should be re-analysed. This may not be necessary when the analytical results are significantly less than the landuse criteria.

2.1.3 Inter-laboratory duplicates

Inter-laboratory duplicates (or split samples) are field duplicates which are sent to a second laboratory and analysed for the same analytes and, as far as possible, by the same methods. These provide a check on the analytical performance of the primary laboratory.

2.1.4 Laboratory Duplicates

Laboratory duplicates (or check samples) are field samples which are split by the laboratory and thereafter treated as separate samples. The RPD is calculated to determine the degree of repeatability (precision) of results obtained from the duplicate analysis.

USEPA (1994) specifies that for inorganics, if the results for laboratory duplicates fall outside of the recommended control limits for a particular analyte, all results for that analyte, in all associated samples of the same matrix, should be qualified as an estimated quantity. For organics, USEPA (1999) does not specify recommended actions for laboratory duplicates.

2.2 Accuracy

Accuracy is a measure of the agreement between an experimental determination and the true value of the parameter being measured. Inasmuch as the true sample concentrations are not known, the determination of accuracy is achieved through the analysis of known reference materials or assessed by the analysis of matrix spikes. Spiking of reference material into the actual sample matrix is the preferred technique because it provides a measure of the matrix effects on the analytical recovery.

Accuracy is measured in terms of percentage recovery as defined by:

$$\%R = ((SSR - SR) / SA) \times 100$$

%R = percentage recovery spike
SSR = spiked sample result
SR = sample result
SA = spike added

2.2.1 Matrix spikes/matrix spike duplicates

These are samples prepared in the laboratory by dividing a sample into two aliquots and then spiking each with identical concentrations of specific analytes. The matrix spike (MS) and matrix spike duplicate (MSD) are then analysed separately and the results compared to determine the accuracy and precision of the analytes.

2.2.2 Surrogate spikes

Surrogate spikes provide an indication of analytical accuracy. They are used only for analyses which use gas chromatography and are compounds which are similar to the organic analytes of interest in chemical composition, extraction and chromatography, but which are not normally found in field samples. Surrogates are generally spiked into all sample aliquots prior to preparation and analysis. If the surrogate spike recovery does not meet the prescribed acceptance criteria, the samples should be re-analysed.

2.2.3 Laboratory control samples

Laboratory control samples (quality control check samples) are laboratory prepared samples of an appropriate clean matrix (i.e. sand or distilled water) which are spiked with known concentrations of specific analytes. The laboratory control sample (LCS) is then analysed and the results are used to assess sample preparation and analytical accuracy, free of matrix effects. Certified reference material (CRM) is another form of LCS, and involves the analysis of a known standard as part of the laboratory batch, e.g. British Columbia sediment samples for analysis of metals.

2.3 Representativeness

Representativeness refers to the degree to which the samples reflect the site specific conditions. It is primarily dependent on the design and implementation of the sampling program, with representativeness of the data being partially ensured by the avoidance of cross-contamination, adherence to sample handling and analytical methods, use of field duplicates, ensuring that samples do not exceed holding times prior to analysis, use of chain-of-custody forms and other appropriate documentation.

There are a number of QC samples which can be collected to assist in the qualification of representativeness, including:

2.3.1 Rinsate blanks

Used to determine if sampling equipment has been adequately decontaminated to ensure that cross-contamination between samples has not occurred. The frequency for rinsate blanks is one per piece of equipment per day (AS 4482.1-1997), however it should be noted that cross-contamination will bias samples upwards, and the frequency should therefore be at the investigators discretion.

PFAS

The frequency for rinsate blanks is at least one for every ten primary samples (PFAS NEMP 2.0).

2.3.2 Trip blanks

Used to determine if transport / couriering / similar has resulted in contamination of the samples. For trip blanks, a sufficient number should be analysed to allow the representativeness of the sampling to be determined. However, it should be noted that cross-contamination will bias samples upwards, and the frequency should therefore be at the investigator’s discretion.

PFAS

In accordance with the PFAS NEMP 2.0, trip blanks should be collected to verify the integrity of sampling and decontamination procedures.

2.3.3 Trip spikes

Used only when volatile organics are sampled to attempt to quantify loss of volatiles during the analytical process. For trip spikes, a sufficient number of samples should be analysed to allow qualification of the likely loss of volatiles during the field sampling.

2.3.4 Laboratory blanks

Laboratory blanks (or method blanks, or analysis blanks) are used to verify that contaminants are not introduced into the samples during sample preparation and analysis. The NEPM (NEPC 1999) specifies that laboratory blanks should be conducted at a frequency of “at least one per process batch”. The acceptance criterion for laboratory blanks is non-detect at the PQL/LOR.

2.4 Comparability

Comparability is a qualitative parameter designed to express the confidence with which one data set may be compared with another, including established criteria. Comparability is maintained by using consistent methods and ensuring that PQLs/LORs are below the relevant criteria.

2.5 Completeness

Quality control sample completeness is defined as the number of QC samples which should have been analysed, compared to the actual number analysed. If the appropriate number of QC samples are not analysed with each matrix or sample batch, then the data reviewer should use professional judgement to determine if the associated sample data should be qualified.

Completeness also refers to the complete and correct inclusion of field/sample documentation and laboratory documentation.

2.5.1 QC sample frequency and criteria

Based on EPA made or approved guidelines, the following QC samples are required for all contaminated site investigations, unless otherwise specified as part of the data quality objectives (DQOs) process review. All data to be used for validation should conform as a minimum to the requirements specified, regardless of minimum sample size.

Quality control sample	Frequency	Results [1]
Precision		
Field duplicates.	≥ 5%	≤ 30 - 50% [2]
Field duplicates (PFAS).	≥ 10%	≤ 30 - 50% [2]
Inter-laboratory duplicates.	≥ 5%	≤ 30 - 50% [2]
Inter-laboratory duplicates (PFAS).	≥ 10%	≤ 30 - 50% [2]
Laboratory duplicates.	≥ 10%	Lab specified [3]
Accuracy		
Surrogate spikes.	Organics by GC	70 – 130% [4]
Matrix spikes (MSs).	≥ 1/media type	70 - 130% [5]
Laboratory control samples (LCSs).	≥ 1/lab batch	70 - 130% [6]
Certified reference material (CRM).	LCS for metals	Lab specified [7]
Representativeness		
Rinsate samples.	≥ 1/field batch	< LOR
Rinsate samples (PFAS).	≥ 1/field batch or 1/ every ten samples	< LOR
Trip blanks.	≥ 1/field batch	< LOR
Trip spikes.	≥ 1/field batch (volatiles)	70 - 130%, ≤ 30 - 50% [8]
Laboratory blanks.	≥ 1/lab batch	< LOR

Notes:

1. Where results are laboratory specified, the laboratory analytical reports should be consulted for specific information.
2. Relative percentage differences (RPDs) for field duplicates from AS 4482.1 (1997).
3. RPDs for laboratory duplicates specified by the laboratory. Based on the magnitude of the results compared to the level of reporting (LOR), e.g. ALS: result < 10 x LOR = no limit, 10 – 20 x LOR = 0-50%, > 20 x LOR = 0-20%. LabMark: < 5 x LOR = 0-100%, 5 – 10 x LOR = 0-75%, > 10 x LOR = 0-50% or 0-30% for metals.
4. Surrogate recoveries specified by laboratory based on global acceptance criteria or dynamic recovery limits based on statistical evaluation of actual laboratory data.
5. MS recoveries specified by laboratory based on global acceptance criteria.

6. LCS recoveries specified by laboratory based on global acceptance criteria or dynamic recovery limits based on statistical evaluation of actual laboratory data.
7. CRM recoveries specified by laboratory based on global acceptance criteria.
8. Trip spike results are specified as either recoveries or RPDs.

3.0 References

Australian New Zealand Environment and Conservation Council (1996) *Guidelines for the laboratory analysis of contaminated soils*. ANZECC, Canberra, ACT.

Australian Standard AS 4482.1 (2005) *Guide to the sampling and investigation of potentially contaminated soil, Part 1: Non-volatile and Semi-volatile compounds.* Standards Australia, Homebush, NSW.

National Chemicals Working Group of the Heads of EPAs Australia and New Zealand (HEPA) (2020) *PFAS National Environmental Management Plan Version 2.0*.

National Environment Protection Council (NEPC) (1999) *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended April 2013)*. National Environment Protection Council, Canberra.

NSW Environment Protection Authority (1994) *Contaminated Sites: Guidelines for Assessing Service Station Sites.* NSW EPA, Chatswood, NSW.

EPA (2020) *Contaminated Land Guidelines: Consultants Reporting on Contaminated Land*.

United States Environmental Protection Agency, Contract Laboratory Program (1994) *National Functional Guidelines for Inorganic Data Review.* USEPA, Washington, DC.

United States Environment Protection Agency, Contract Laboratory Program (1999) *National Functional Guidelines for Organic Data Review.* USEPA, Washington, DC.

Appendix F

Photographic Log

Photograph 1

View southwest towards the location of TP109 – TP111 within the western portion of the site.

Photograph 2

View southwest towards the location of TP101 – TP105 within the southern portion of the site.

Photograph 3
View southwest from SS113 towards the existing rail infrastructure.

Photograph 4
View northeast from BH104 towards BH109 – BH111 and Braidwood Road.

Photograph 5
View southwest from BH103 within the eastern portion of the site.

Photograph 6
View northwest from SS138 towards the former meal room and the former refuelling gantry.

Photograph 7
View northeast from BH105 towards the former meal room in the northern portion of the site.

Photograph 8
View northeast from TP115 towards the locomotive sand hopper.

Photograph 9
An example of a surface sample collected within the four-foot of the railway lines in the southern portion of the site.

Photograph 10
An example of test pit, TP105, excavated using hand tools, located in the south-eastern portion of the site.

Photograph 11
An example of the soil profile encountered across the site (TP105).

Photograph 12
An example of the soil profile encountered at BH108 within close proximity to Borehole 5 (J&K, 1997). Note the overlying gravel material and underlying ash layer.

Photograph 13
An example of the intermittent hydrocarbon staining observed on surface soils within the southern portion of the site.

Photograph 14
An example of the anthropogenic material intermixed through fill material across the site.

Photograph 15

An example of the potential ACM observed at multiple locations across the surface of the site.

Photograph 16

View north towards the roundhouse adjacent to SS112. Note the potential ACM on the surface.

Photograph 17

Potential ACM fragments identified in fill material (0.3 – 0.4 m) during the advancement of BH104 in the eastern portion of the site, adjacent to the administration building.

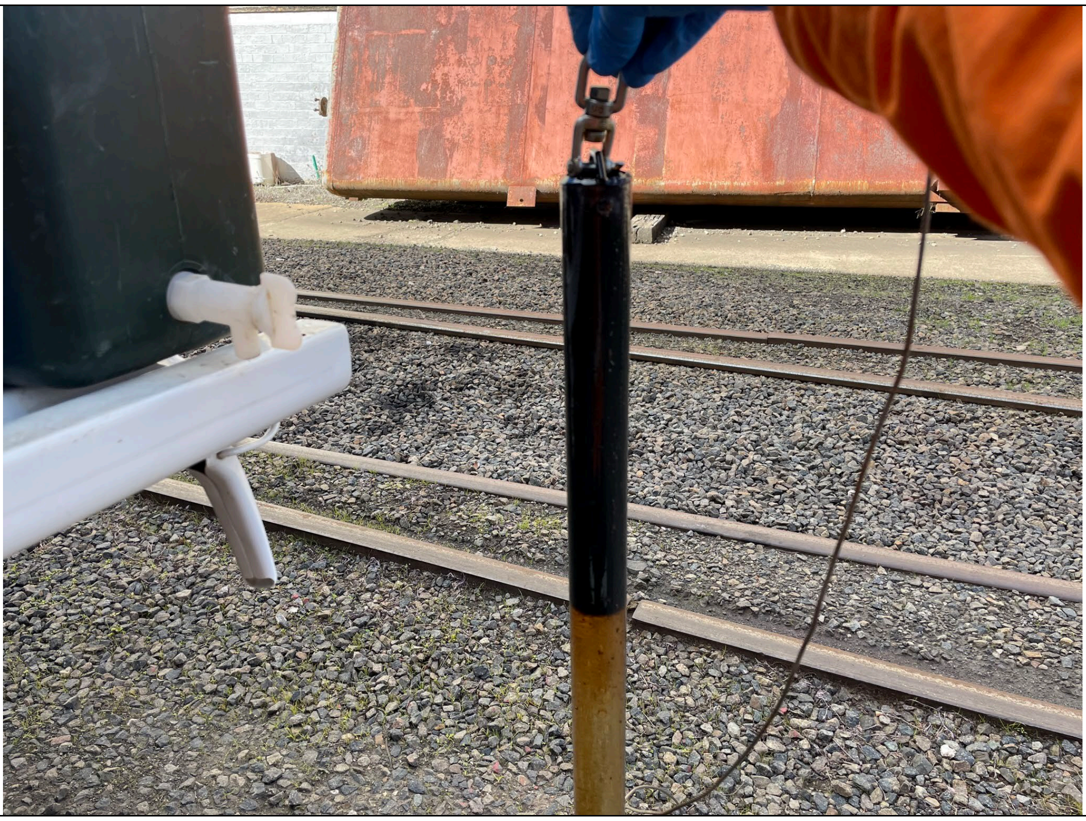
Photograph 18

An example of the soil profile encountered during the installation of groundwater monitoring well MW102 (increasing in depth from left to right).

Photograph 19
View southwest towards the location of groundwater monitoring well MW101.

Photograph 20
View west towards the location of groundwater monitoring well MW102.

Photograph 21
View south towards the locations of groundwater monitoring well MW103.



Photograph 22
LNAPL identified within groundwater monitoring well MW06.

Photograph 23
View east towards surface water monitoring point SW01. .

Photograph 24
Standing water sampled at SW01.

Photograph 25
View south towards surface water monitoring point, SW02.

Photograph 26
Standing water sampled at SW02. Note the slight sheen on the surface of the water

Appendix G

Historical Soil and Groundwater Data

Table 1: Historical Soil Analytical Summary - Heavy Metals (mg/kg)

Sample	Depth (m)	Material Encountered	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
	LOR		*5*	*1*	*2*	*5*	*5*	*2*	*5*	*0.1*
Analytical - Phase 1 Environmental Contamination Assessment (CMPS&F, 1996)										
SP1A	-	-	3	nd	13	150	160	-	1,200	nd
SP2A	-	-	nd	nd	19	2,600	**4,600**	-	620	0.68
SP3A	-	-	5.9	nd	40	350	370	-	220	0.056
Analytical - Environmental Investigation (J&K, 1997)										
BH1	0.1-0.5	Fill	18	nd	11	170	440	11	295	0.085
BH1	2.5-3.0	Natural	nd	nd	18	23	36	13	13	-
BH2	0.1-0.5	Fill	11	nd	7	1,050	**2,100**	13	210	0.06
BH2	2.5-3.0	Natural	nd	nd	20	18	16	7	10	-
BH3	0.5-0.8	Natural	nd	nd	23	47	60	10	16	-
BH3	2.5-3.0	Natural	nd	nd	19	23	19	12	7.5	-
BH4	0.0-0.4	Fill	nd	nd	65	470	**1,650**	55	800	0.14
BH4	2.0-2.3	Natural	nd	nd	28	25	23	9.5	15	-
BH5	0.0-0.5	Fill	125	nd	34	16,500	**43,000**	60	1,150	0.055
BH5	0.5-1.2	Fill	nd	nd	5	150	330	11	25	0.025
BH6	0.0-0.5	Fill	nd	nd	9.5	31	130	8.5	26	0.015
BH6	1.6-2.1	Fill	nd	nd	12	50	70	12	37	0.03
BH7	0.1-0.5	Fill	11	nd	55	90	165	17	36	0.09
BH7	1.5-1.95	Natural	nd	nd	32	17	29	8.5	9	-
BH8	0.2-0.5	Fill	nd	nd	7.5	345	650	11	49	0.05
BH8	2.3-2.7	Natural	18	nd	35	24	40	14	9	-
BH9	0.2-0.6	Fill	nd	nd	8	325	125	11	95	0.04
BH9	1.6-2.1	Natural	nd	nd	26	25	40	8.5	9	-
BH10	0.2-0.5	Fill	15	nd	9	420	700	16	145	0.09
BH10	2.2-2.6	Natural	17	nd	38	39	55	32	14	-
BH11	0.7-1.0	Natural	nd	nd	18	19	38	8.5	10	-
BH11	2.5-3.0	Natural	nd	nd	23	27	25	6	9	-
BH12	0.3-0.8	Fill	nd	nd	6	600	43	22	40	0.035
BH12	2.5-3.0	Natural	nd	nd	40	26	35	23	11	-
BH13	0.2-0.5	Fill	nd	nd	6.5	65	55	14	315	0.02
BH13	2.5-3.0	Natural	nd	nd	48	36	50	19	19	-
BH14	0.2-0.4	Fill	50	nd	14	1,500	**2,300**	23	650	0.05
BH14	2.5-3.0	Natural	nd	nd	55	34	30	24	19	-
BH15	0.4-0.8	Natural	nd	nd	37	175	235	17	70	-
BH15	2.5-3.0	Natural	nd	nd	21	16	25	9	8	-
BH16	0.3-0.7	Natural	10	nd	28	75	85	15	32	-
BH16	2.5-3.0	Natural	21	nd	38	38	49	20	17	-
BH17	0.3-0.8	Fill	nd	nd	7	385	335	24	160	0.05
BH17	2.5-3.0	Natural	nd	nd	29	31	24	15	7.5	-
BH18	0.2-0.4	Fill	nd	nd	7	285	300	17	405	0.045
BH18	2.5-3.0	Natural	nd	nd	30	38	36	23	9.5	-
BH19	0.1-0.5	Fill	29	nd	22	120	250	8.5	185	0.045
BH19	2.0-2.5	Natural	nd	nd	27	75	95	9	22	-
BH20	0.1-0.5	Fill	70	nd	8	60	110	5.5	105	0.03
BH20	2.3-2.5	Natural	nd	nd	35	27	55	24	14	-
BH21	0.1-0.5	Fill	30	nd	10	220	275	11	475	0.025
BH21	2.1-2.5	Natural	nd	nd	23	33	32	4.5	8.5	-
BH22	0.1-0.5	Natural	nd	nd	32	21	11	13	14	-
BH22	2.5-3.0	Natural	nd	nd	25	24	nd	10	8.5	-
BH23	0.2-0.5	Fill	17	nd	19	190	315	20	100	0.07
BH23	2.5-3.0	Natural	nd	nd	20	22	nd	10	15	-
BH24	0.2-0.5	Natural	nd	nd	17	30	20	9.5	13	-
BH24	2.5-3.0	Natural	nd	nd	29	26	17	20	11	-
BH25	0.2-0.6	Fill	nd	nd	190	230	500	25	475	0.24
BH25	1.5-2.0	Fill	nd	nd	455	160	215	28	550	0.12
BHW1	0.2-0.4	Natural	nd	nd	32	21	14	9	8	-
BHW1	10.5-11.0	Natural	nd	nd	21	12	14	12	23	-
BHW2	0.5-0.8	Natural	12	nd	40	37	95	32	22	-
BHW2	9.0-9.5	Natural	nd	nd	55	20	23	21	18	-
BHW3	0.4-0.8	Natural	nd	nd	19	55	55	6.5	21	-
BHW3	8.1-8.5	Natural	nd	nd	28	20	24	18	24	-
Analytical - Detailed Site Investigation (Cavvanba, 2020)										

Table 1: Historical Soil Analytical Summary - Heavy Metals (mg/kg)

Sample	Depth (m)	Material Encountered	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
	LOR		*5*	*1*	*2*	*5*	*5*	*2*	*5*	*0.1*
BH01	0.4-0.5	Fill	nd	nd	44	16	27	9	9	nd
BH02	0.0-0.05	Fill	7	nd	17	143	212	16	94	nd
BH02	6.9-7.0	Natural	nd	nd	36	21	18	27	16	nd
BH03	0.4-0.5	Fill	27	nd	11	1,900	**1,800**	17	297	0.4
BH04	1.9-2.0	Fill	nd	nd	65	24	17	16	15	nd
BH04	6.9-7.0	Natural	nd	nd	34	19	22	24	14	nd
BH05	0.0-0.05	Fill	16	1	8	944	**1,570**	16	592	0.2
BH06	0.0-0.05	Fill	7	nd	8	739	576	8	62	nd
BH07	0.0-0.05	Fill	8	nd	8	461	391	11	116	nd
BH07	5.9-6.0	Natural	7	nd	14	9	15	24	11	nd
BH08	0.0-0.05	Fill	11	nd	9	349	447	13	67	nd
BH09	0.2-0.3	Fill	12	nd	12	906	**1,850**	14	147	0.2
BH09	5.2-5.3	Natural	nd	nd	20	13	18	14	13	nd
BH10	0.4-0.5	Fill	8	nd	6	1,160	**2,620**	12	219	0.2
BH11	0.0-0.05	Fill	22	nd	8	3,530	**9,440**	17	270	0.2
HA01	0.0-0.05	Fill	6	nd	9	292	304	13	459	nd
TP01	0.05-0.1	Fill	9	nd	9	83	122	12	234	nd
TP02	0.4-0.5	Fill	nd	nd	52	10	15	10	7	nd
TP03	0.0-0.05	Fill	20	nd	36	173	362	36	387	nd
TP03	1.4-1.5	Fill	nd	nd	40	18	23	12	13	nd
TP04	0.4-0.5	Fill	13	nd	26	86	**3,700**	19	313	nd
TP05	0.05-0.1	Fill	16	nd	50	116	320	9	183	nd
TP05	0.4-0.5	Fill	13	nd	31	1,820	**3,570**	27	450	0.1
TP06	0.4-0.5	Fill	33	1	31	1,180	1,420	30	645	0.1
TP07	0.0-0.05	Fill	46	1	10	923	**2,020**	13	597	0.2
TP08	0.4-0.5	Fill	30	28	151	1,210	**6,160**	102	6,140	0.3
TP08	2.2-2.3	Natural	nd	nd	43	15	26	11	15	nd
TP09	0.0-0.05	Fill	30	8	193	2,430	**2,750**	90	26,200	nd
TP10	0.4-0.5	Fill	8	nd	22	297	385	20	119	nd
TP10	1.9-2.0	Natural	nd	nd	28	22	15	12	14	nd
TP11	0.0-0.05	Fill	16	nd	16	179	248	21	422	nd
TP12	0.05-0.1	Fill	nd	nd	29	142	194	11	101	nd
TP13	0.0-0.05	Fill	19	nd	94	212	320	53	230	nd
TP13	1.9-2.0	Natural	nd	nd	46	21	34	10	154	nd
TP14	0.0-0.05	Fill	7	nd	155	721	717	19	180	nd
TP15	0.05-0.1	Fill	12	nd	17	162	221	14	225	nd
TP15	0.4-0.5	Fill	nd	nd	51	13	17	6	9	nd
Analytical - Additional Environmental Site Assessment (Cavvanba, 2021)										
MW09	0.0-0.05	Fill	40	nd	15	93	144	10	320	nd
MW09	7.9-8.0	Natural	nd	nd	22	15	10	11	14	nd
MW10	6.9-7.0	Natural	nd	nd	44	20	23	20	6	nd
MW10	7.9-8.0	Natural	nd	nd	44	21	27	23	8	nd
MW11	0.05-0.1	Fill	nd	nd	29	18	17	8	7	nd
MW11	8.9-9.0	Natural	nd	nd	18	10	12	10	8	nd
MW12	0.0-0.05	Fill	nd	nd	23	150	330	8	341	nd
MW12	7.9-8.0	Natural	nd	nd	11	9	7	9	nd	nd
MW13	0.0-0.05	Fill	9	nd	37	1,050	1,120	10	135	0.4
MW13	4.9-5.0	Natural	nd	nd	24	15	18	14	6	nd
TP16	0.0-0.05	Fill	-	-	-	-	104	-	-	-
TP16	0.3-0.4	Fill	-	-	-	-	396	-	-	-
TP17	0.0-0.05	Fill	-	-	-	-	186	-	-	-
TP18	0.0-0.05	Fill	-	-	-	-	168	-	-	-
TP18	0.9-1.0	Natural	-	-	-	-	38	-	-	-
TP19	0.0-0.05	Fill	-	-	-	-	236	-	-	-
TP19	0.4-0.5	Fill	-	-	-	-	443	-	-	-
TP20	0.0-0.05	Natural	-	-	-	-	329	-	-	-
TP21	0.0-0.05	Fill	-	-	-	-	131	-	-	-
TP21	0.4-0.5	Fill	-	-	-	-	1,270	-	-	-
TP21	0.9-1.0	Fill	-	-	-	-	89	-	-	-
TP22	0.0-0.05	Fill	-	-	-	-	426	-	-	-
TP22	0.3-0.4	Fill	-	-	-	-	11	-	-	-
TP23	0.0-0.05	Fill	-	-	-	-	226	-	-	-
TP23	0.9-1.0	Fill	-	-	-	-	**1,540**	-	-	-

Table 1: Historical Soil Analytical Summary - Heavy Metals (mg/kg)

Sample	Depth (m)	Material Encountered	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
LOR			*5*	*1*	*2*	*5*	*5*	*2*	*5*	*0.1*
TP23	1.9-2.0	Natural	-	-	-	-	9	-	-	-
TP24	0.0-0.05	Fill	-	-	-	-	62	-	-	-
TP25	0.0-0.05	Fill	-	-	-	-	700	-	-	-
TP25	0.4-0.5	Fill	-	-	-	-	16	-	-	-
TP26	0.0-0.05	Fill	-	-	-	-	468	-	-	-
TP27	0.0-0.05	Fill	-	-	-	-	275	-	-	-
TP27	0.4-0.5	Fill	-	-	-	-	1,040	-	-	-
TP28	0.0-0.05	Fill	-	-	-	-	194	-	-	-
TP28	0.9-1.0	Natural	-	-	-	-	61	-	-	-
TP29	0.0-0.05	Fill	-	-	-	-	269	-	-	-
TP29	0.4-0.5	Fill	-	-	-	-	25	-	-	-
TP30	0.0-0.05	Fill	-	-	-	-	32	-	-	-
TP30	1.4-1.5	Fill	-	-	-	-	85	-	-	-
TP31	0.0-0.05	Fill	-	-	-	-	882	-	-	-
TP31	0.4-0.5	Fill	-	-	-	-	30	-	-	-
TP32	0.0-0.05	Fill	-	-	-	-	152	-	-	-
TP33	0.0-0.05	Fill	-	-	-	-	118	-	-	-
TP33	0.4-0.5	Fill	-	-	-	-	36	-	-	-
TP34	0.0-0.05	Fill	-	-	-	-	500	-	-	-
TP34	0.4-0.5	Fill	-	-	-	-	506	-	-	-
TP35	0.0-0.05	Fill	-	-	-	-	235	-	-	-
TP35	0.4-0.5	Fill	-	-	-	-	272	-	-	-
TP36	0.0-0.05	Fill	-	-	-	-	247	-	-	-
TP36	0.9-1.0	Fill	-	-	-	-	85	-	-	-
TP37	0.0-0.05	Fill	-	-	-	-	742	-	-	-
TP37	0.4-0.5	Fill	-	-	-	-	24	-	-	-
TP38	0.0-0.05	Fill	-	-	-	-	18	-	-	-
TP39	0.0-0.05	Fill	-	-	-	-	229	-	-	-
TP39	0.3-0.4	Fill	-	-	-	-	90	-	-	-
TP40	0.0-0.05	Fill	-	-	-	-	329	-	-	-
TP41	0.0-0.05	Natural	-	-	-	-	72	-	-	-
TP42	0.0-0.05	Fill	-	-	-	-	124	-	-	-
TP42	0.4-0.5	Fill	-	-	-	-	157	-	-	-
TP43	0.0-0.05	Fill	-	-	-	-	148	-	-	-
TP43	0.9-1.0	Natural	-	-	-	-	24	-	-	-
TP44	0.0-0.05	Fill	-	-	-	-	360	-	-	-
TP44	0.4-0.5	Fill	-	-	-	-	353	-	-	-
TP44	0.6-0.7	Fill	-	-	-	-	21	-	-	-
TP45	0.0-0.05	Fill	-	-	-	-	164	-	-	-
TP45	0.2-0.3	Fill	-	-	-	-	33	-	-	-
Analytical - Supplementary Detailed Site Investigation (Cavvanba, 2023)										
SS101	0.0-0.1	Fill	34	6	66	273	623	54	664	nd
SS102	0.0-0.1	Fill	27	nd	27	143	222	16	249	nd
SS103	0.0-0.1	Fill	29	nd	31	117	250	14	202	nd
SS104	0.0-0.1	Fill	144	5	46	427	1,130	45	866	nd
SS105	0.0-0.1	Fill	26	8	54	488	1,130	35	836	nd
SS106	0.0-0.1	Fill	63	15	130	288	537	51	672	0.1
SS107	0.0-0.1	Fill	61	nd	22	735	475	18	419	nd
SS108	0.0-0.1	Fill	11	2	25	205	266	14	200	nd
SS109	0.0-0.1	Fill	11	2	71	209	322	19	417	nd
SS110	0.0-0.1	Fill	20	3	45	1,980	**2,260**	45	883	nd
SS111	0.0-0.1	Fill	18	2	39	158	498	24	552	nd
SS112	0.0-0.1	Fill	163	20	206	2,280	640	77	2,520	nd
SS113	0.0-0.1	Fill	80	7	103	855	302	52	989	nd
SS114	0.0-0.1	Fill	29	1	52	394	523	19	761	nd
SS115	0.0-0.1	Fill	97	3	75	777	294	24	822	nd
SS116	0.0-0.1	Fill	8	nd	34	231	234	13	431	nd
SS117	0.0-0.1	Fill	22	2	86	253	457	41	790	nd
SS118	0.0-0.1	Fill	7	nd	10	36	102	6	136	nd
SS119	0.0-0.1	Fill	29	3	44	196	902	32	658	nd
SS120	0.0-0.1	Fill	17	1	24	172	650	19	407	nd
SS121	0.0-0.1	Fill	59	1	18	176	324	17	337	nd
SS122	0.0-0.1	Fill	24	nd	23	115	226	14	356	nd

Table 1: Historical Soil Analytical Summary - Heavy Metals (mg/kg)

Sample	Depth (m)	Material Encountered	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
LOR			*5*	*1*	*2*	*5*	*5*	*2*	*5*	*0.1*
SS123	0.0-0.1	Fill	14	nd	16	220	274	20	200	nd
SS124	0.0-0.1	Fill	26	3	22	170	344	29	470	nd
SS125	0.0-0.1	Fill	7	nd	28	126	142	10	135	nd
SS126	0.0-0.1	Fill	6	nd	42	123	243	64	272	nd
SS127	0.0-0.1	Fill	nd	nd	29	138	76	49	219	nd
SS128	0.0-0.1	Fill	10	nd	43	97	112	72	206	nd
SS129	0.0-0.1	Fill	13	nd	71	182	551	24	606	nd
SS130	0.0-0.1	Fill	6	nd	18	231	443	12	225	nd
SS131	0.0-0.1	Fill	13	nd	55	428	779	14	216	nd
SS132	0.0-0.1	Fill	5	nd	16	111	216	8	149	nd
SS133	0.0-0.1	Fill	6	nd	31	150	436	9	354	nd
SS134	0.0-0.1	Fill	6	nd	16	210	710	9	449	0.1
SS135	0.0-0.1	Fill	nd	nd	18	165	539	8	192	nd
SS136	0.0-0.1	Fill	7	nd	21	210	352	14	236	nd
SS137	0.0-0.1	Fill	nd	nd	10	12	15	6	52	nd
SS138	0.0-0.1	Fill	nd	nd	20	15	23	7	52	nd
SS139	0.0-0.1	Fill	nd	nd	7	94	90	7	179	nd
SS140	0.0-0.1	Fill	nd	nd	16	68	54	38	128	nd
SS141	0.0-0.1	Fill	nd	nd	16	156	197	13	478	nd
SS142	0.0-0.1	Fill	nd	nd	14	65	121	5	154	nd
SS143	0.0-0.1	Fill	9	2	33	472	1,310	20	746	0.1
SS144	0.0-0.1	Fill	7	nd	35	135	163	19	216	nd
SS145	0.0-0.1	Fill	5	nd	13	153	98	12	205	nd
SS146	0.0-0.1	Fill	10	nd	22	87	57	12	99	nd
SS147	0.0-0.1	Fill	nd	nd	15	136	182	10	863	nd
SS148	0.0-0.1	Fill	nd	nd	5	238	33	8	96	nd
BH101	0.0-0.1	Fill	9	nd	13	60	153	7	178	nd
BH102	0.0-0.1	Fill	7	nd	25	324	916	14	400	0.1
BH103	0.0-0.1	Fill	8	nd	19	247	601	8	238	0.2
BH104	0.0-0.1	Fill	5	nd	17	127	204	7	163	nd
	0.3-0.4	Fill	8	nd	12	626	1,020	11	140	nd
BH105	0.0-0.1	Fill	10	1	45	418	1,140	11	597	0.1
BH106	0.0-0.1	Fill	nd	nd	12	328	592	11	324	0.2
BH107	0.0-0.1	Fill	nd	nd	11	136	98	8	186	nd
BH108	0.0-0.1	Fill	nd	nd	21	21	28	8	41	nd
	0.3-0.4	Fill	6	nd	5	602	**1,910**	10	49	0.2
BH109	0.0-0.1	Fill	5	nd	46	141	220	7	174	nd
BH110	0.0-0.1	Fill	nd	nd	12	41	128	4	130	nd
BH111	0.0-0.1	Fill	11	nd	18	203	431	11	296	nd
TP101	0.0-0.1	Fill	19	nd	24	63	143	9	167	nd
TP102	0.0-0.1	Fill	18	7	36	206	669	26	248	nd
TP103	0.0-0.1	Fill	20	nd	16	169	381	11	299	0.1
TP104	0.0-0.1	Fill	282	nd	284	472	427	36	245	nd
TP105	0.0-0.1	Fill	19	nd	13	125	290	14	208	nd
	0.3-0.4	Fill	13	nd	8	238	356	9	58	nd
TP106	0.0-0.1	Fill	19	nd	32	224	297	23	314	nd
TP107	0.0-0.1	Fill	20	nd	14	221	249	30	190	nd
	0.3-0.4	Fill	8	nd	66	43	64	17	142	nd
TP108	0.0-0.1	Fill	20	1	43	229	392	37	298	nd
TP109	0.0-0.1	Fill	15	nd	13	188	331	14	416	nd
TP110	0.0-0.1	Fill	10	nd	12	133	86	10	151	nd
	0.3-0.4	Fill	27	nd	6	194	47	15	70	nd
TP111	0.0-0.1	Fill	17	nd	29	189	217	23	349	nd
TP112	0.0-0.1	Fill	8	nd	38	630	530	24	394	0.1
TP113	0.0-0.1	Fill	9	nd	15	310	823	12	184	nd
	0.4-0.5	Fill	10	nd	14	409	1,200	15	298	nd
TP114	0.0-0.1	Fill	112	nd	9	68	209	5	262	nd
TP115	0.0-0.1	Fill	12	nd	20	213	396	18	423	nd
	0.3-0.4	Fill	nd	nd	nd	6	38	3	31	nd
TP116	0.0-0.1	Fill	11	nd	25	168	108	19	141	nd
TP117	0.0-0.1	Fill	nd	nd	30	132	132	14	363	nd
TP118	0.0-0.1	Fill	nd	nd	16	428	257	13	1,290	nd
MW103	0.2-0.3	Fill	10	nd	45	109	111	24	819	nd

Table 1: Historical Soil Analytical Summary - Heavy Metals (mg/kg)

Sample	Depth (m)	Material Encountered	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury
LOR			*5*	*1*	*2*	*5*	*5*	*2*	*5*	*0.1*
Statistics										
Samples analysed			191	191	191	191	246	188	191	85
Detects			112	26	190	191	244	188	190	44
% detect			59%	14%	99%	100%	99%	100%	99%	52%
Maximum			282	28	455	16,500	**43,000**	102	26,200	0.7
Mean			25	5	35	380	FALSE	19	423	0.1
Median			13	3	23	150	214	14	180	0.1
Minimum			<5	<1	<2	5	<5	2	5	<0.1
95% UCL (Fill - lead only)			-	-	-	-	685.2*	-	-	-
Criteria										
HILs - Commercial / Industrial D			3,000	900	3,600	240,000	**1,500**	6,000	400,000	730/180
EILs - Commercial and Industrial (Aged)			160	-	680	310	1,800	290	750	-

Notes: *95% UCL (H-UCL) calculated based on fill material data only, incorporating all historical and current lead analytical data. Refer to Table 7 for calculations.

Table 3: Historical Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH >C_{10} - C_{16}	F3 TRH >C_{16} - C_{34}	F4 TRH >C_{34} - C_{40}	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{16} - C_{28}	TPH C_{30} - C_{36}	TPH C_6 - C_{36}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*	*0.08*	*2*	*4*	*3*	*9.1*
Analytical - Environmental Investigation (J&K, 1997)																	
BH1	0.1-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH1	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH2	0.1-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH2	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH3	0.5-0.8	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH3	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH4	0.0-0.4	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH4	2.0-2.3	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH5	0.0-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	14	nd	14
BH5	0.5-1.2	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	2	19	nd	22
BH6	0.0-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH6	1.6-2.1	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH7	0.1-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH7	1.5-1.95	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH8	0.2-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH8	2.3-2.7	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH9	0.2-0.6	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	4	15	nd	19
BH9	1.6-2.1	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH10	0.2-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	0.3	nd	nd	nd	0.35
BH10	2.2-2.6	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH11	0.7-1.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH11	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH12	0.3-0.8	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	0.09	nd	nd	nd	nd
BH12	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	4	4
BH13	0.2-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH13	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH14	0.2-0.4	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH14	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	8	nd	8.4
BH15	0.4-0.8	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH15	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	16	37	nd	53
BH16	0.3-0.7	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH16	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH17	0.3-0.8	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	0.2	39	32	nd	71
BH17	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	3	3.1
BH18	0.2-0.4	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd

Table 3: Historical Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH >C_{10} - C_{16}	F3 TRH >C_{16} - C_{34}	F4 TRH >C_{34} - C_{40}	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{16} - C_{28}	TPH C_{30} - C_{36}	TPH C_6 - C_{36}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*	*0.08*	*2*	*4*	*3*	*9.1*
BH18	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	52	38	nd	90
BH19	0.1-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH19	2.0-2.5	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH20	0.1-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH20	2.3-2.5	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	3	20	nd	22
BH21	0.1-0.5	Fill	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH21	2.1-2.5	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	9	nd	9
BH21	2.5-3.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BH22	0.1-0.5	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH22	2.5-3.0	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	0.2-0.5	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH23	2.5-3.0	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24	0.2-0.5	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH24	2.5-3.0	Natural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25	0.2-0.6	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH25	1.5-2.0	Fill	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BHW1	0.2-0.4	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BHW1	10.5-11.0	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BHW2	0.5-0.8	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BHW2	9.0-9.5	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BHW3	0.4-0.8	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
BHW3	8.1-8.5	Natural	nd	nd	nd	nd	nd	-	-	-	-	-	nd	nd	nd	nd	nd
Analytical - Detailed Site Investigation (Cavvanba, 2020)																	
BH01	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH02	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	220	nd	nd	nd	170	nd	170
BH02	6.9-7.0	Natural	nd	nd	nd	nd	nd	nd	nd	130	110	nd	nd	60	180	nd	240
BH03	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	2,060	880	nd	nd	960	1,490	2,450
BH04	1.9-2.0	Fill	nd	nd	nd	nd	nd	nd	21	**2,540**	2,220	nd	nd	1,240	3,460	nd	4,700
BH04	6.9-7.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH05	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	260	nd	nd	nd	160	140	300
BH06	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	250	140	nd	nd	110	180	290
BH07	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	330	100	nd	nd	200	180	380
BH07	5.9-6.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH08	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	130	nd	nd	nd	nd	nd	nd
BH09	0.2-0.3	Fill	nd	0.6	0.6	2.3	nd	4	28	**5,990**	**6,960**	470	11	3,310	8,780	950	13,000
BH09	5.2-5.3	Natural	nd	nd	nd	nd	nd	nd	nd	*460*	470	nd	nd	240	650	nd	890

Table 3: Historical Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH >C_{10} - C_{16}	F3 TRH >C_{16} - C_{34}	F4 TRH >C_{34} - C_{40}	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{16} - C_{28}	TPH C_{30} - C_{36}	TPH C_6 - C_{36}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*	*0.08*	*2*	*4*	*3*	*9.1*
BH10	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	420	160	nd	nd	230	260	490
BH11	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
HA01	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	380	160	nd	nd	220	220	440
TP01	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP02	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP03	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	260	150	nd	nd	170	150	320
TP03	1.4-1.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP04	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP05	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP05	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	210	nd	nd	nd	120	nd	120
TP06	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	440	140	nd	nd	180	320	500
TP07	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	170	nd	nd	nd	nd	110	110
TP08	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	620	260	nd	nd	270	440	710
TP08	2.2-2.3	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP09	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP10	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP10	1.9-2.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP11	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP12	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP13	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	260	nd	nd	nd	120	180	300
TP13	1.9-2.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP14	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	200	nd	nd	nd	110	120	230
TP15	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	170	nd	nd	nd	nd	nd	nd
TP15	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Analytical - Additional Environmental Site Assessment (Cavvanba, 2021)																	
MW09	0.0-0.05	Fill	nd	nd	nd	1.8	0.7	nd	nd	nd	150	nd	nd	nd	nd	110	110
MW09	7.9-8.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW10	6.9-7.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW10	7.9-8.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW11	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	160	180	nd	nd	nd	130	130
MW11	8.9-9.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW12	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW12	7.9-8.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW13	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	nd	nd	nd	nd	100	100
MW13	4.9-5.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Analytical - Supplementary Detailed Site Investigation (Cavvanba, 2023)																	

Table 3: Historical Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH >C_{10} - C_{16}	F3 TRH >C_{16} - C_{34}	F4 TRH >C_{34} - C_{40}	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{16} - C_{28}	TPH C_{30} - C_{36}	TPH C_6 - C_{36}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*	*0.08*	*2*	*4*	*3*	*9.1*
SS101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	840	260	nd	nd	450	520	970
SS102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd	nd	nd	nd	nd	nd
SS103	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	310	150	nd	nd	140	240	380
SS104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	520	260	nd	nd	280	380	660
SS105	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	70	*5,540*	1,820	nd	nd	3,000	3,390	6,390
SS106	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	120	*3,530*	1,650	nd	60	1,760	2,710	4,530
SS107	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	880	500	nd	nd	440	650	1,090
SS108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	510	220	nd	nd	240	400	640
SS109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	160	1,130	290	nd	80	830	510	1,420
SS110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	200	nd	nd	nd	100	150	250
SS111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	120	1,170	370	nd	60	820	600	1,480
SS112	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	450	220	nd	nd	230	320	550
SS113	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	390	190	nd	nd	200	290	490
SS114	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	460	180	nd	nd	270	280	550
SS115	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	50	1,460	640	nd	nd	780	980	1,760
SS116	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	340	160	nd	nd	200	240	440
SS117	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	80	1,070	350	nd	50	680	580	1,310
SS118	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	130	nd	nd	nd	nd	nd	nd
SS119	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	50	790	300	nd	nd	480	460	940
SS120	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	380	150	nd	nd	260	220	480
SS121	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	480	260	nd	nd	190	360	550
SS122	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS123	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	180	nd	nd	nd	110	nd	110
SS124	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	520	190	nd	nd	340	260	600
SS125	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	2,260	1,740	nd	nd	790	2,000	2,790
SS126	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	170	nd	nd	nd	nd	120	120
SS127	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	160	nd	nd	nd	130	130
SS128	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	nd	nd	nd	nd	nd	nd
SS129	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	400	220	nd	nd	230	240	470
SS130	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	370	210	nd	nd	200	230	430
SS131	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd	nd	nd	nd	nd	nd
SS132	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS133	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	250	160	nd	nd	120	170	290
SS134	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	130	nd	nd	nd	nd	nd	nd
SS135	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	100	nd	nd	nd	nd	nd	nd
SS136	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	250	100	nd	nd	140	140	280
SS137	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table 3: Historical Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH >C_{10} - C_{16}	F3 TRH >C_{16} - C_{34}	F4 TRH >C_{34} - C_{40}	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{16} - C_{28}	TPH C_{30} - C_{36}	TPH C_6 - C_{36}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*	*0.08*	*2*	*4*	*3*	*9.1*
SS138	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	nd	nd	nd	nd	nd	nd
SS139	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS140	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	210	170	nd	nd	nd	200	200
SS141	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS142	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS143	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd	nd	nd	130	nd	130
SS144	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	690	400	nd	nd	330	480	810
SS145	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
SS146	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd	nd	nd	nd	nd	nd
SS147	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	160	nd	nd	nd	nd	110	110
SS148	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	130	150	nd	nd	nd	110	110
BH102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	nd	nd	nd	nd	nd	nd
BH103	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	240	150	nd	nd	150	130	280
BH104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd	nd	nd	nd	nd	nd
BH105	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	170	nd	nd	nd	110	nd	110
BH106	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH107	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd	nd	nd	nd	130	130
TP101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd	nd	nd	120	110	230
TP103	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	350	110	nd	nd	250	160	410
TP104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd	nd	nd	140	nd	140
TP105	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	460	170	nd	nd	330	220	550
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	180	nd	nd	nd	150	nd	150
TP106	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	420	160	nd	nd	300	200	500
TP107	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	400	130	nd	nd	290	180	470
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	100	nd	nd	nd	nd	nd	nd
TP108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	580	230	nd	nd	390	310	700
TP109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd	nd	nd	130	nd	130
TP110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table 3: Historical Soil Analytical Summary - TRH and BTEXN (mg/kg)

Sample	Depth (m)	Material Encountered	Benzene	Toluene	Ethyl benzene	meta- & para-Xylenes	ortho-Xylene	Naphthalene	F1 TRH C_6 - C_{10}	F2 TRH >C_{10} - C_{16}	F3 TRH >C_{16} - C_{34}	F4 TRH >C_{34} - C_{40}	TPH C_6 - C_9	TPH C_{10} - C_{14}	TPH C_{16} - C_{28}	TPH C_{30} - C_{36}	TPH C_6 - C_{36}
LOR			*0.2*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*10*	*50*	*100*	*100*	*0.08*	*2*	*4*	*3*	*9.1*
TP111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP112	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	190	nd	nd	nd	130	nd	130
TP113	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	120	nd	nd	nd	nd	nd	nd
	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	220	nd	nd	nd	120	150	270
TP114	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	1,020	590	nd	nd	480	810	1,290
TP115	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	60	520	160	nd	nd	430	180	610
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	110	900	190	nd	60	750	280	1,090
TP116	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	170	nd	nd	nd	140	nd	140
TP117	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	110	nd	nd	nd	nd	nd	nd
TP118	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW103	0.2-0.3	Fill	nd	nd	nd	nd	nd	nd	nd	250	470	nd	nd	90	620	nd	710
Statistics																	
Samples analysed			181	181	181	181	181	132	132	132	132	132	181	181	181	181	181
Detects			0	1	1	2	1	1	2	14	88	47	4	16	72	61	85
% detect			0%	1%	1%	1%	1%	1%	2%	11%	67%	36%	2%	9%	40%	34%	47%
Maximum			<0.2	0.6	0.6	2.3	0.7	4.0	28.0	5,990	6,960	1,820	11	3,310	8,780	3,390	13,000
Mean			<0.2	0.6	0.6	2.1	0.7	4.0	24.5	728	585	340	3	335	487	417	774
Median			<0.5	0.6	0.6	2.1	0.7	4.0	24.5	95	250	210	0	60	200	220	300
Minimum			<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<10	<50	<100	<100	<0.08	<2	<4	<3	<9.1
Criteria - Commercial / Industrial (Sand)																	
HSL D - 0 m to < 1 m			3	NL	NL	230		NL	260	NL	NL	NL	-	-	-		-
HILs - Commercial / Industrial D			-	-	-	-		-	-	-	-	-	-	-	-		-
Ecological - Commercial / Industrial (Aged)			75	135	165	180		370	215	170	1,700	3,300	-	-	-		-
Management Limits - Commercial and Industrial			-	-	-	-		-	700	1,000	*3,500*	10,000	-	-	-		-
HSL D - Direct Contact			430	99,000	27,000	81,000		-	26,000	20,000	27,000	38,000	-	-	-		-
Intrusive Maintenance Worker - Direct Contact			1,100	120,000	85,000	130,000		29,000	82,000	62,000	85,000	120,000	-	-	-		-
Intrusive Maintenance Worker - Shallow Trench - 0 m to < 2 m			350	NL	NL	NL		NL	NL	NL	NL	NL	-	-	-		-

Table 4: Historical Soil Analytical Summary - PAHs & Phenols (mg/kg)

Sample	Depth (m)	Material Encountered	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Total PAHs	B(a)P TEQ	Phenol	Pentachlorophenol
LORs			*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*2*
Analytical - Detailed Site Investigation (Cavvanba, 2020)																						
BH01	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH02	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH02	6.9-7.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH03	0.4-0.5	Fill	nd	nd	nd	nd	1	nd	0.9	1	0.6	0.7	0.8	nd	nd	nd	nd	nd	5.5	nd	nd	nd
BH04	1.9-2.0	Fill	1.3	nd	0.7	1.6	2.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	6.4	nd	nd	nd
BH04	6.9-7.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH05	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH06	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH07	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH07	5.9-6.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH08	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH09	0.2-0.3	Fill	7.1	nd	1.1	2.2	4.3	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	15.2	nd	nd	nd
BH09	5.2-5.3	Natural	nd	nd	nd	nd	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	nd	nd	nd
BH10	0.4-0.5	Fill	nd	nd	nd	nd	0.6	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.6	nd	nd	nd
BH11	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
HA01	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP01	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP02	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP03	0.0-0.05	Fill	0.8	nd	nd	nd	0.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.6	nd	nd	nd
TP03	1.4-1.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP04	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP05	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP05	0.4-0.5	Fill	nd	nd	nd	nd	0.6	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.6	nd	nd	nd
TP06	0.4-0.5	Fill	nd	nd	nd	nd	0.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.7	nd	nd	nd
TP07	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP08	0.4-0.5	Fill	nd	nd	nd	nd	0.6	nd	0.5	0.5	nd	nd	nd	nd	nd	nd	nd	nd	1.6	nd	nd	nd
TP08	2.2-2.3	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP09	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP10	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP10	1.9-2.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP11	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP12	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP13	0.0-0.05	Fill	nd	nd	nd	nd	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	nd	nd	nd
TP13	1.9-2.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TP14	0.0-0.05	Fill	0.6	nd	nd	nd	0.6	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.2	nd	nd	nd
TP15	0.05-0.1	Fill	nd	nd	nd	nd	0.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.8	nd	nd	nd
TP15	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Table 4: Historical Soil Analytical Summary - PAHs & Phenols (mg/kg)

Sample	Depth (m)	Material Encountered	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Total PAHs	B(a)P TEQ	Phenol	Pentachlorophenol
LORs			*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*2*
Analytical - Additional Environmental Site Assessment (Cavvanba, 2021)																						
MW09	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW09	7.9-8.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW10	6.9-7.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW10	7.9-8.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW11	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW11	8.9-9.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW12	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW12	7.9-8.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW13	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW13	4.9-5.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
Analytical - Supplementary Detailed Site Investigation (Cavvanba, 2023)																						
SS101	0.0-0.1	Fill	nd	nd	nd	nd	0.8	nd	nd	nd	nd	0.5	nd	nd	nd	nd	nd	nd	1.3	nd	-	-
SS102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS103	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS104	0.0-0.1	Fill	nd	nd	nd	nd	1	nd	0.6	0.6	nd	nd	nd	nd	nd	nd	nd	nd	2.2	nd	-	-
SS105	0.0-0.1	Fill	nd	nd	nd	nd	0.8	nd	0.7	0.7	nd	nd	nd	nd	nd	nd	nd	nd	2.2	nd	-	-
SS106	0.0-0.1	Fill	nd	nd	nd	nd	2.4	nd	2.2	1.8	0.5	0.6	0.5	nd	nd	nd	nd	nd	8	nd	-	-
SS107	0.0-0.1	Fill	nd	nd	nd	nd	1.1	nd	1.7	1.4	1	1.1	2.7	0.7	nd	0.7	nd	0.6	11	0.5	-	-
SS108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS109	0.0-0.1	Fill	1	nd	nd	nd	2.9	nd	0.9	0.8	nd	nd	nd	nd	nd	nd	nd	nd	5.6	nd	-	-
SS110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS111	0.0-0.1	Fill	0.9	0.8	nd	nd	3.1	nd	2.4	2.3	1.2	1.6	1.7	0.5	0.8	nd	nd	nd	15.3	1.2	-	-
SS112	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS113	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS114	0.0-0.1	Fill	nd	nd	nd	nd	0.7	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.7	nd	-	-
SS115	0.0-0.1	Fill	nd	nd	nd	nd	0.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.8	nd	-	-
SS116	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS117	0.0-0.1	Fill	nd	nd	nd	nd	3	nd	1.4	1.1	0.6	0.8	0.8	nd	nd	nd	nd	nd	7.7	nd	-	-
SS118	0.0-0.1	Fill	nd	nd	nd	nd	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5	nd	-	-
SS119	0.0-0.1	Fill	nd	nd	nd	nd	1.8	nd	1.1	1.1	0.5	0.9	0.9	nd	nd	nd	nd	nd	6.3	nd	-	-
SS120	0.0-0.1	Fill	nd	nd	nd	nd	1	nd	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.5	nd	-	-
SS121	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS122	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS123	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS124	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	0.8	0.8	nd	0.6	0.6	nd	nd	nd	nd	nd	3.7	nd	-	-
SS125	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS126	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS127	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS128	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS129	0.0-0.1	Fill	nd	nd	nd	nd	0.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.9	nd	-	-

Table 4: Historical Soil Analytical Summary - PAHs & Phenols (mg/kg)

Sample	Depth (m)	Material Encountered	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Total PAHs	B(a)P TEQ	Phenol	Pentachlorophenol
	LORs		*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*2*
SS130	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS131	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS132	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS133	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS134	0.0-0.1	Fill	nd	nd	nd	nd	0.9	nd	1.3	1.2	nd	0.6	0.5	nd	nd	nd	nd	nd	4.5	nd	-	-
SS135	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS136	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	1	1.1	nd	0.6	0.7	nd	nd	nd	nd	nd	3.4	nd	-	-
SS137	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS138	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS139	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS140	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS141	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS142	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS143	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS144	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS145	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS146	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS147	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
SS148	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
BH101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
BH102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
BH103	0.0-0.1	Fill	nd	0.8	nd	nd	0.9	nd	1	1.6	0.8	1	1.1	nd	1	0.6	nd	1	9.8	1.3	-	-
BH104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
BH105	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
BH106	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
BH107	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-

Table 4: Historical Soil Analytical Summary - PAHs & Phenols (mg/kg)

Sample	Depth (m)	Material Encountered	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Total PAHs	B(a)P TEQ	Phenol	Pentachlorophenol
LORs			*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*2*
BH108	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
BH109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
BH110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
BH111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP101	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP102	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP103	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP104	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP105	0.0-0.1	Fill	nd	nd	nd	nd	1	nd	0.5	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.5	nd	-	-
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP106	0.0-0.1	Fill	nd	nd	nd	nd	1.1	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.1	nd	-	-
TP107	0.0-0.1	Fill	nd	nd	nd	nd	1.1	nd	0.6	nd	nd	nd	0.5	nd	nd	nd	nd	nd	2.2	nd	-	-
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP108	0.0-0.1	Fill	nd	nd	nd	nd	1.2	nd	1.2	1	nd	0.5	0.6	nd	nd	nd	nd	nd	4.5	nd	-	-
TP109	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP110	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
	0.3-0.4	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP111	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP112	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP113	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	0.8	0.8	nd	0.6	0.7	nd	nd	nd	nd	nd	2.9	nd	-	-
TP114	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP115	0.0-0.1	Fill	0.7	nd	nd	nd	0.8	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.5	nd	-	-
	0.3-0.4	Fill	0.7	nd	nd	nd	0.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	1.6	nd	-	-
TP116	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP117	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
TP118	0.0-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
MW103	0.2-0.3	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-
Statistics																						
Samples analysed			132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	37	37
Detects			8	2	2	2	34	0	19	16	7	13	13	2	2	2	0	2	37	3	0	0
% detect			6%	2%	2%	2%	26%	0%	14%	12%	5%	10%	10%	2%	2%	2%	0%	2%	28%	2%	0%	0%
Maximum			7.1	0.8	1.1	2.2	4.3	<0.5	2.4	2.3	1.2	1.6	2.7	0.7	1	0.7	<0.5	1	15.3	1.3	<0.5	<2
Mean			1.64	0.80	0.90	1.90	1.25	<0.5	1.06	1.11	0.74	0.78	0.93	0.60	0.90	0.65	<0.5	0.80	3.67	1.00	<0.5	<2
Median			0.85	0.8	0.9	1.9	0.9	<0.5	0.9	1.05	0.6	0.6	0.7	0.6	0.9	0.65	<0.5	0.8	1.6	1.2	<0.5	<2
Minimum			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2
Criteria																						
HILs - Commercial / Industrial D			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,000	40	240,000	660
EILs - Commercial / Industrial (Aged)			370	-	-	-	-	-	-	-	-	-	-	-	1.4	-	-	-	-	-		

Table 5: Historical Soil Analytical Summary - OCPs, OPPs, PCBs and Phenoxyacetic Acid Herbicides (mg/kg)

Sample	Depth (m)	Material Encountered	OCPs							OPPs	PCBs	Phenoxyacetic Acid Herbicides					
			Heptachlor	Total Chlordane (sum)	Endrin	Endosulfan (sum)	Methoxychlor	Sum of Aldrin + Dieldrin	Sum of DDD + DDE + DDT	Chloropyrifos	Total Polychlorinated biphenyls	2.4.5-T	2.4-D	MCPA	MCPB	Mecoprop	Picloram
LORs			*0.2*	*0.1*	*0.05*	*0.05*	*0.2*	*0.05*	*0.05*	*0.05*	*0.1*	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*
Analytical - Detailed Site Investigation (Cavvanba, 2020)																	
BH01	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
BH02	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
BH03	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
BH05	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
BH06	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
BH07	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
BH08	0.0-0.05	Fill	-	-	-	-	-	-	-	-	-	nd	nd	nd	nd	nd	nd
BH09	0.2-0.3	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
BH10	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
BH11	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
HA01	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP01	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
TP02	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP03	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP03	1.4-1.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP05	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP06	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
TP07	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd
TP08	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP08	2.2-2.3	Natural	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP09	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP10	0.4-0.5	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP10	1.9-2.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP11	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP12	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP13	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP14	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-	-
TP15	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd

Table 5: Historical Soil Analytical Summary - OCPs, OPPs, PCBs and Phenoxyacetic Acid Herbicides (mg/kg)

Sample	Depth (m)	Material Encountered	OCPs							OPPs	PCBs	Phenoxyacetic Acid Herbicides					
			Heptachlor	Total Chlordane (sum)	Endrin	Endosulfan (sum)	Methoxychlor	Sum of Aldrin + Dieldrin	Sum of DDD + DDE + DDT	Chloropyrifos	Total Polychlorinated biphenyls	2.4.5-T	2.4-D	MCPA	MCPB	Mecoprop	Picloram
LORs			*0.2*	*0.1*	*0.05*	*0.05*	*0.2*	*0.05*	*0.05*	*0.05*	*0.1*	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*	*0.02*
Analytical - Additional Environmental Site Assessment (Cavvanba, 2021)																	
MW09	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
MW09	7.9-8.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
MW10	6.9-7.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
MW10	7.9-8.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
MW11	0.05-0.1	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
MW11	8.9-9.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
MW12	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
MW12	7.9-8.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
MW13	0.0-0.05	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
MW13	4.9-5.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	-	-	-
Statistics																	
Samples analysed			37	37	37	37	37	37	37	37	10	8	8	8	8	8	8
Detects			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% detect			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Maximum			<0.2	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Mean			<0.2	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Median			<0.2	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Minimum			<0.2	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Criteria																	
HILs - Commercial / Industrial D			50	530	100	2,000	2,500	45	3,600	2,000		5,000	9,000	5,000	5,000	5,000	35,000
EILs - Commercial and Industrial (Aged)			-	-	-	-	-	-	640 (DDT only)	-		-	-	-	-	-	-

Table 6: Historical Soil Analytical Summary - Volatile Organic Compounds (mg/kg)																	
Sample	Depth (m)	Material Encountered	1,1-dichloroethene	Chloroethane	Chloroform	Chloromethane	Trichloroethene	Tetrachloroethene	Vinyl chloride	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Bromobenzene	Chlorobenzene	2-hexanone (MBK)	p-Isopropyltoluene
LORs			*0.5*	*5*	*0.5*	*5*	*0.5*	*0.5*	*5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*5*	*0.5*
Analytical - Detailed Site Investigation (Cavvanba, 2020)																	
BH02 6.9-7.0	6.9-7.0	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH04 1.9-2.0	1.9-2.0	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
BH09 0.2-0.3	0.2-0.3	Fill	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.5
BH09 5.2-5.3	5.2-5.3	Natural	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Statistics																	
Samples analysed			4	4	4	4	4	4	4	4	4	4	4	4	4	4
Detects			0	0	0	0	0	0	0	0	0	0	0	0	0	1
% detect			0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%
Maximum			<0.2	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.1	<0.2	<0.1	<0.05	<0.05	0.5
Mean			<0.2	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.1	<0.2	<0.1	<0.05	<0.05	0.5
Median			<0.2	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.1	<0.2	<0.1	<0.05	<0.05	0.5
Minimum			<0.2	<0.1	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.1	<0.2	<0.1	<0.05	<0.05	<0.2
Criteria																	
HILs - Commercial / Industrial D			NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL

A complete VOC scan is presented within the associated laboratory analytical report.

Table 7: Historical Asbestos Analytical Summary

Sample	Field observations	Asbestos detected in laboratory sample?	Asbestos Type Laboratory result	Classification - AF or ACM Based on laboratory & field assessment
Analytical - Environmental Investigation (J&K, 1997)				
BH1_0.0-0.2	Plant fragments detected.	No	N/A	N/A
BH2_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH3_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH4_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH5_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH6_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH7_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH8_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH9_0.0-0.05	Plant fragments detected.	No	N/A	N/A
BH10_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH11_0.0-0.2	Plant fragments detected.	No	N/A	N/A
BH12_0.0-0.2	Plant fragments detected.	No	N/A	N/A
BH13_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH14_0.0-0.1	-	No	N/A	N/A
BH15_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH16_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH17_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH18_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH19_0.1-0.2	Plant fragments detected.	No	N/A	N/A
BH20_0.1-0.2	Plant fragments detected.	No	N/A	N/A
BH21_0.1-0.2	Plant fragments detected.	No	N/A	N/A
BH22_0.0-0.1	Plant fragments detected.	No	N/A	N/A

Table 7: Historical Asbestos Analytical Summary

Sample	Field observations	Asbestos detected in laboratory sample?	Asbestos Type Laboratory result	Classification - AF or ACM Based on laboratory & field assessment
BH23_0.0-0.2	Plant fragments detected.	No	N/A	N/A
BH24_0.0-0.2	Plant fragments detected.	No	N/A	N/A
BH25_0.0-0.2	Plant fragments detected.	No	N/A	N/A
BH W1_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH W2_0.0-0.1	Plant fragments detected.	No	N/A	N/A
BH W3_0.0-0.1	Plant fragments detected.	No	N/A	N/A
Analytical - Detailed Site Investigation (Cavvanba, 2020)				
ACM05	Cement sheeting fragment adjacent to TP06.	Yes	Chrysotile	ACM
ACM06	Cement sheeting fragment within TP06.	Yes	Chrysotile	ACM
ACM07	Cement sheeting fragment collected from rail abutment.	Yes	Chrysotile	ACM
Analytical - Additional Environmental Site Assessment (Cavvanba, 2021)				
ACM01	Cement sheeting fragment identified within TP30 at 1.7 metres in depth.	Yes	Chrysotile	ACM
Analytical - Supplementary Detailed Site Investigation (Cavvanba, 2023)				
ACM101	One piece of asbestos cement sheeting approximately 35x30x5mm. Collected adjacent to the railway tracks within the south-eastern portion of Area E near SS101.	Yes	Ch + Am	ACM
ACM102	One piece of asbestos cement sheeting approximately 80x45x5mm. Collected wihtin the railway tracks in the northern portion of Area E near SS112.	Yes	Ch	ACM
ACM103	One piece of asbestos cement sheeting approximately 45x35x5mm. Collected on the surface within the central portion of Area B near TP110.	Yes	Ch	ACM
ACM104	One piece of asbestos cement sheeting approximately 60x40x5mm. Collected on the surface within the western portion of Area E near TP106.	Yes	Ch	ACM
ACM105	One piece of asbestos cement sheeting approximately 35x30x5mm. Collected on the surface near SS139 and adjacent to the former meal room within the northern portion of site.	Yes	Ch + Am	ACM
TP109_0-0.1	One piece of asbestos cement sheeting approximately 40x35x5mm. Collected within the surface fill material after seiving had been completed.	Yes	Ch	ACM
TP113_0.4-0.5	Several pieces of asbestos cement sheeting approximately 85x60x5mm. Collected within the deeper ash fill material at TP113.	Yes	Ch + Am	ACM
BH104_0.3-0.4	One piece of asbestos cement sheeting approximately 85x75x5mm. Collected within the deeper ash fill material at BH104.	Yes	Ch	ACM

Table 7: UCL Statistics for Lead (Fill material only)

User Selected Options

Date/Time of Computation	ProUCL 5.130/10/2023 2:05:53 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

C0

General Statistics

Total Number of Observations	278	Number of Distinct Observations	173
		Number of Missing Observations	0
Minimum	11	Mean	673
Maximum	43000	Median	282.5
SD	2694	Std. Error of Mean	161.6
Coefficient of Variation	4.003	Skewness	14.28

Normal GOF Test

Shapiro Wilk Test Statistic	0.195	Shapiro Wilk GOF Test
5% Shapiro Wilk P Value	0	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.403	Lilliefors GOF Test
5% Lilliefors Critical Value	0.0536	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	939.7	95% Adjusted-CLT UCL (Chen-1995)	1087
		95% Modified-t UCL (Johnson-1978)	962.8

Gamma GOF Test

A-D Test Statistic	3.597E+28	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.807	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.161	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.0572	Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.651	k star (bias corrected MLE)	0.647
Theta hat (MLE)	1033	Theta star (bias corrected MLE)	1041
nu hat (MLE)	362.2	nu star (bias corrected)	359.6
MLE Mean (bias corrected)	673	MLE Sd (bias corrected)	836.9
		Approximate Chi Square Value (0.05)	316.7
Adjusted Level of Significance	0.0491	Adjusted Chi Square Value	316.5

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	764.3	95% Adjusted Gamma UCL (use when n<50)	764.8

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.978	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk P Value	0.139	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.0701	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.0536	Data Not Lognormal at 5% Significance Level

Data appear Approximate Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.398	Mean of logged Data	5.575
Maximum of Logged Data	10.67	SD of logged Data	1.248

Assuming Lognormal Distribution

95% H-UCL	685.2	90% Chebyshev (MVUE) UCL	740.8
95% Chebyshev (MVUE) UCL	817.4	97.5% Chebyshev (MVUE) UCL	923.7
99% Chebyshev (MVUE) UCL	1132		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	938.8	95% Jackknife UCL	939.7
95% Standard Bootstrap UCL	937.5	95% Bootstrap-t UCL	1497
95% Hall's Bootstrap UCL	1931	95% Percentile Bootstrap UCL	968.8
95% BCA Bootstrap UCL	1157		
90% Chebyshev(Mean, Sd) UCL	1158	95% Chebyshev(Mean, Sd) UCL	1377
97.5% Chebyshev(Mean, Sd) UCL	1682	99% Chebyshev(Mean, Sd) UCL	2281

Suggested UCL to Use

95% H-UCL	685.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Table 8: Historical Groundwater Gauging Data

Well ID	Gauging Date	TOC Elevation (mAHD)	Ground Surface Elevation (mAHD)	Depth of Well (mbTOC)	Depth to NAPL (mbTOC)	Depth to Water (mbTOC)	NAPL Thickness (m)	Corrected Depth to Water (m)	Water Elevation (mAHD)
W1	30/05/1997	637.330	638.900	12.000	-	7.570	-	9.140	629.760
	24/08/2020			12.073		7.207		8.777	630.123
	7/07/2021					6.337		7.907	630.993
W2	30/05/1997	636.230	635.310	10.500	-	5.560	-	4.640	630.670
	24/08/2020			11.270		6.212		5.292	630.018
	5/07/2021					5.362		4.442	630.868
	24/02/2022					4.985		4.065	631.245
	27/04/2023					5.365		4.445	630.865
W3	30/05/1997	635.810	635.070	9.000	-	6.200	-	5.460	629.610
	24/08/2020			9.370		5.825		5.085	629.985
	5/07/2021					5.053		4.313	630.757
	24/02/2022					4.675		3.935	631.135
	27/04/2023					5.275		4.535	630.535
MW01	24/08/2020	637.670	637.700	8.567	-	6.451	-	6.481	631.219
	7/07/2021				-	6.451	-	6.481	631.219
	24/02/2022				-	6.075	-	6.105	631.595
	27/04/2023				-	6.715	-	6.745	630.955
MW02	24/08/2020	638.200	638.195	8.728	-	7.952	-	7.947	630.248
	5/07/2021				-	6.502	-	6.497	631.698
	23/02/2022				-	6.711	-	6.706	631.489
	26/04/2023				-	7.365	-	7.360	630.835
MW03	24/08/2020	638.600	638.660	8.974	-	8.284	-	8.344	630.316
	8/07/2021				-	7.230	-	7.290	631.370
	23/02/2022				-	6.552	-	6.612	632.048
	26/04/2023				-	7.300	-	7.360	631.300
MW04	24/08/2020	638.090	638.200	8.947	-	7.877	-	7.987	630.213
	8/07/2021				-	6.968	-	7.078	631.122
	23/02/2022				-	6.291	-	6.401	631.799
	26/04/2023				-	7.155	-	7.265	630.935
MW05	24/08/2020	638.110	638.180	9.964	-	7.692	-	7.762	630.418
	8/07/2021				-	6.448	-	6.518	631.662
	23/02/2022				-	5.515	-	5.585	632.595
	26/04/2023				-	6.415	-	6.485	631.695
MW06	24/08/2020	638.010	638.110	8.960	-	7.238	-	7.338	630.772
	7/07/2021				-	6.177	-	6.277	631.833
	23/02/2022				4.920	5.080	0.16	5.180	632.930
	27/04/2023				6.095	6.625	0.530	6.725	631.385
MW07	24/08/2020	638.050	638.150	9.056	-	6.755	-	6.855	631.295
	7/07/2021				-	5.913	-	6.013	632.137
	23/02/2022				-	5.650	-	5.750	632.400
	26/04/2023				-	6.025	-	6.125	632.025
MW08	24/08/2020	637.920	637.830	6.133	-	4.238	-	4.148	633.682
	7/07/2021				-	5.550	-	5.460	632.370
	23/02/2022				-	4.620	-	4.530	633.300
	26/04/2023				Well dry				
MW09	5/07/2021	637.767	637.849	9.075	-	6.452	-	6.534	631.315
	24/02/2022				-	6.291	-	6.373	631.476
	26/04/2023				-	7.095	-	7.177	630.672
MW10	5/07/2021	634.887	634.986	8.014	-	4.022	-	4.121	630.865
	24/02/2022				-	3.480	-	3.579	631.407
	27/04/2023				-	4.295	-	4.394	630.592
MW11	7/07/2021	636.035	636.133	9.001	-	5.102	-	5.200	630.933
MW12	7/07/2021	636.155	636.282	8.465	-	5.242	-	5.369	630.913
	23/02/2022				-	4.901	-	5.028	631.254
	26/04/2023				-	5.535	-	5.662	630.620
MW13	5/07/2021	635.497	635.575	9.024	-	4.338	-	4.416	631.159
	23/02/2022				-	3.970	-	4.048	631.527
	26/04/2023				-	4.645	-	4.723	630.852
MW101	27/04/2023	635.133	635.531	7.505	-	4.775	-	5.173	630.358
MW102	27/04/2023	634.400	634.595	7.905	-	3.995	-	4.190	630.405
MW103	27/04/2023	636.403	635.531	8.560	-	6.750	-	5.878	629.653

m AHD: metres Australian Height Datum
mbTOC: metres below top of casing
NAPL: non-aqueous phase liquid

Table 9: Historical Groundwater Quality Parameters

Location ID	Date Sampled	DO (mg/L)	EC (μScm^{-1})	Salinity (ppm)	Salinity (‰)	pH	Eh (mV)	TEMP (ºC)	Turbidity (NTU)	Purge Volume (L)	Comments
W1	30/05/1997*	-	2,290	1,466	1.466	7.68	-	-	-	-	No hydrocarbon odours.
	24/08/2020	3.38	2,710	1,734	1.734	6.77	168	10.80	32.4	2.5	Clear, no odour or sheen, well in good condition, PID = 0.0 ppm
	7/07/2021	6.22	2,344	1,500	1.500	7.22	20	13.57	-	2.5	Clear, no odour or sheen, well in good condition
W2	30/05/1997*	-	1,160	742	0.742	7.75	-	-	-	-	No hydrocarbon odours.
	24/08/2020	6.23	1,260	806	0.806	6.84	235	8.36	78.0	2.5	Clear, no odour or sheen, well in good condition, PID = 0.0 ppm
	5/07/2021	4.42	1,276	817	0.817	7.17	-6.2	14.81	-	3.0	Slightly cloudy, brown tinge, no odour or sheen, well in good condition
	24/02/2022	4.63	1,103	706	0.706	7.48	234.7	18.24	-	2.5	Clear, no odour or sheen, well in good condition
	24/02/2022	4.63	1,103	706	0.706	7.48	234.7	18.24	-	2.5	Clear, no odour or sheen, well in good condition
	27/04/2023	4.2	1,777	1,137	1.137	8.86	87.2	15.62	-	2.5	Clear, no odour or sheen, well in good condition
W3	30/05/1997*	-	2,110	1,350	1.350	7.39	-	-	-	-	No hydrocarbon odours.
	24/08/2020	2.61	654	419	0.419	7.01	155	16.88	305.0	2.5	Cloudy, milky brown, no odour or sheen, well in good condition, PID = 0.1 ppm
	7/07/2021	5.43	504	323	0.323	7.23	26.2	13.92	-	2.5	Slightly cloudy becoming clear, no odour or sheen, well in good condition
	24/02/2022	3.67	966	618	0.618	6.76	248.1	19.23	-	2.5	Clear, no odour or sheen, well in good condition
	24/02/2022	3.67	966	618	0.618	6.76	248.1	19.23	-	2.5	Clear, no odour or sheen, well in good condition
	27/04/2023	3.09	1,252	801	0.801	6.73	99.4	17.95	-	2.5	Clear, no odour or sheen, well in good condition
MW01	25/08/2020	2.86	940	602	0.602	7.05	196	11.06	374.7	2.5	Cloudy, slight hydrocarbon odour, no sheen, well in good condition, PID = 4.9 ppm
	7/07/2021	1.87	967	619	0.619	7.01	15.2	14.94	-	2.5	Clear, no odour or sheen, well in good condition
	24/02/2022	2.56	974	623	0.623	6.93	239.6	18.22	-	2.5	Slightly cloudy, no sheen or odour, well in good condition
	24/02/2022	2.56	974	623	0.623	6.93	239.6	18.22	-	2.5	Slightly cloudy, no sheen or odour, well in good condition
	27/04/2023	3.17	1,005	643	0.643	6.97	99.2	17.02	-	2.5	Slightly cloudy, no sheen or odour, well in good condition
MW02	25/08/2020	5.01	1,180	755	0.755	6.81	-76	15.25	>1000	2.5	Turbid, brown, strong hydrocarbon odour, no sheen, well in good condition, PID = 19.8 ppm
	5/07/2021	1.62	693	444	0.444	7.11	-43.6	13.83	-	2.5	Slightly cloudy becoming clear, slight hydrocarbon odour, no sheen, well in good condition
	23/02/2022	3.37	700	448	0.448	6.89	138.7	18.36	-	2.5	Clear, slight hydrocarbon odour, no sheen, well in good condition
	23/02/2022	3.37	700	448	0.448	6.89	138.7	18.36	-	2.5	Clear, slight hydrocarbon odour, no sheen, well in good condition
	26/04/2023	3.12	1,567	1,003	1.003	6.80	92.3	19.10	-	2.5	Slightly cloudy, brown tinge, slight hydrocarbon odour, slight sheen
MW03	25/08/2020	6.8	1,910	1,222	1.222	7.29	136	13.80	11.3	2.5	Clear, no odour or sheen, well in good condition, PID = 0.0 ppm
	8/07/2021	4.00	1,828	1,170	1.170	7.78	33.7	13.08	-	2.5	Clear, no odour or sheen, well in good condition
	23/02/2022	5.12	1,214	777	0.777	7.91	218.2	18.72	-	2.5	Clear, no odour or sheen, well in good condition
	23/02/2022	5.12	1,214	777	0.777	7.91	218.2	18.72	-	2.5	Clear, no odour or sheen, well in good condition
	26/04/2023	5.2	1,920	1,229	1.229	7.71	101.1	20.15	-	2.5	Clear, no odour or sheen, well in good condition
MW04	25/08/2020	5.06	1,070	685	0.685	7.47	217	10.32	30.7	2.5	Clear, no odour or sheen, well in good condition, PID = 0.2 ppm
	8/07/2021	5.13	1,282	820	0.820	7.58	56.6	12.90	-	2.5	Clear, no odour or sheen, well in good condition
	23/02/2022	4.21	989	633	0.633	7.65	227.3	18.15	-	2.5	Slightly cloudy, brown tinge, no odour or sheen, well in good condition
	23/02/2022	4.21	989	633	0.633	7.65	227.3	18.15	-	2.5	Slightly cloudy, brown tinge, no odour or sheen, well in good condition
	26/04/2023	4.68	1,642	1,051	1.051	7.60	85.2	17.25	-	2.5	Slightly cloudy, brown tinge, no odour or sheen, well in good condition
MW05	25/08/2020	3.4	1,210	774	0.774	7.19	-319	9.95	34.2	2.5	Clear, no odour or sheen, well in good condition, PID = 0.2 ppm
	8/07/2021	4.14	1,077	689	0.689	7.48	30.1	13.33	-	2.5	Clear, no odour or sheen, well in good condition
	23/02/2022	3.99	922	590	0.590	7.52	223.6	18.57	-	2.5	Clear, no odour or sheen, well in good condition
	23/02/2022	3.99	922	590	0.590	7.52	223.6	18.57	-	2.5	Clear, no odour or sheen, well in good condition
	26/04/2023	4.28	1,760	1,126	1.126	6.06	98.2	17.32	-	2.5	Clear, no odour or sheen
MW06	26/08/2020	4.45	754	483	0.483	7.82	79	6.79	21.3	2.5	Clear, slight hydrocarbon odour, no sheen, well in good condition, PID = 53.9 ppm
	7/07/2021	3.56	389	249	0.249	6.80	-100.7	13.47	-	2.5	Clear, strong hydrocarbon odour, slight sheen, well in good condition
	23/02/2022	Sample collected of LNAPL material									Clear, strong hydrocarbon/oil odour, dark black LNAPL present in well (0.16 m), PID = 88.0 ppm in well, 0.8 ppm in gatic
	27/04/2023	2.78	668	428	0.428	6.90	101.2	16.28	-	2.5	Slightly cloudy, brown tinge, strong hydrocarbon/oil odour and sheen. Dark black LNAPL present in well (0.5 m).
MW07	26/08/2020	9.20	825	528	0.528	7.54	167	9.94	32.7	3.0	Clear, no odour or sheen, well in good condition, PID = 0.8 ppm
	7/07/2021	6.64	740	474	0.474	7.11	0.8	14.03	-	2.5	Clear, no odour or sheen, well in good condition
	23/02/2022	5.13	521	333	0.333	6.87	245.2	18.21	-	2.5	Clear, no odour or sheen, well in good condition
	26/04/2023	4.88	912	584	0.584	6.71	85.2	16.92	-	2.5	Slightly cloudy, no odour or sheen

Table 9: Historical Groundwater Quality Parameters

Location ID	Date Sampled	DO (mg/L)	EC (μScm-¹)	Salinity (ppm)	Salinity (‰)	pH	Eh (mV)	TEMP (ºC)	Turbidity (NTU)	Purge Volume (L)	Comments
MW08	26/08/2020	9.78	515	330	0.330	7.23	190	11.95	96.2	2.5	Slightly cloudy, milky white, no odour or sheen, well in good condition, PID = 0.1 ppm
	7/07/2021	4.9	425	272	0.272	7.41	-47.1	12.84	-	2.5	Clear, no odour or sheen, well in good condition
	23/02/2022	7.96	340	218	0.218	7.52	233.1	17.41	-	2.5	Clear, no odour or sheen, well in good condition
	26/04/2023	Well dry									Well dry
MW09	5/07/2021	3.52	869	556	0.556	7.47	67.4	14.12	-	2.5	Slightly cloudy, brown, no odour or sheen, well in good condition
	24/02/2022	4.17	1,032	660	0.660	7.37	241.1	17.62	-	2.5	Cloudy, light brown, no odour or sheen, well in good condition
	26/04/2023	3.30	1,105	707	0.707	7.18	80.1	15.25	-	2.5	Brown, turbid, no odour or sheen
MW10	5/07/2021	4.25	721	461	0.461	7.29	-42.3	16.32	-	2.5	Slightly cloudy becoming clear, slight hydrocarbon odour, no sheen, well in good condition
	24/02/2022	2.56	461	295	0.295	7.27	221.5	18.27	-	2.5	Clear, no odour or sheen, well in good condition
	27/04/2023	3.60	549	351	0.351	7.28	67.1	17.25	-	2.5	Slightly cloudy, brown tinge, no odour or sheen
MW11	7/07/2021	3.89	1,171	749	0.749	7.60	2.9	14.15	-	2.5	Slightly cloudy, brown tinge, no odour or sheen, well in good condition
MW12	7/07/2021	6.22	944	604	0.604	7.41	20.1	13.43	-	2.5	Slightly cloudy, brown tinge, no odour or sheen, well in good condition
	23/02/2022	3.62	590	378	0.378	7.48	195.9	18.06	-	2.5	Clear, no odour or sheen, well in good condition
	26/04/2023	3.68	1,117	715	0.715	6.00	101.9	17.35	-	2.5	Cloudy, brown, no odour or sheen
MW13	5/07/2021	5.12	649	415	0.415	7.66	-10.6	14.73	-	2.5	Slightly cloudy, brown tinge, no odour or sheen, well in good condition
	23/02/2022	3.38	476	305	0.305	7.82	219.2	17.65	-	2.5	Slightly cloudy, light brown tinge, no odour or sheen, well in good condition
	26/04/2023	3.88	898	575	0.575	7.56	79.2	17.80	-	2.5	Slightly cloudy, brown tinge, no odour or sheen
MW101	27/04/2023	3.54	1780	1,139	1.139	7.08	107.2	17.21	-	2.5	Slightly cloudy, brown tinge, no odour or sheen
MW102	27/04/2023	4.12	2032	1,300	1.300	7.43	116.2	18.12	-	2.5	Slightly cloudy, brown tinge, no odour or sheen
MW103	27/04/2023	3.11	1601	1,025	1.025	7.17	106.7	19.05	-	2.5	-

*Conductivity and pH laboratory results presented for W1, W2 and W3 from the May 1997 monitoring event.

Table 10: Historical Groundwater Analytical Summary - TRH & BTEXN (µg/L)

Sample Identification	Date Sampled	BTEXN					TRH								
		Benzene	Toluene	Ethyl benzene	Xylenes	Naphthalene	C_6 - C_9 TPH	F1>C_6 - C_{10} TRH	F2 >C_{10} - C_{16} TRH	F3 >C_{16} - C_{34} TRH	F4 >C_{34} - C_{40} TRH	>C_{10} - C_{40} TRH	C_{10} - C_{14} TPH	C_{15} - C_{27} TPH	C_{28} - C_{36} TPH
LOR		*1*	*2*	*2*	*2*	*2*	*20*	*20*	*100*	*100*	*100*	*100*	*20*	*50*	*30*
Analytical - Groundwater															
W1	30/05/1997	nd	nd	nd	nd	-	nd	-	-	-	-	-	nd	nd	nd
	24/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
W2	30/05/1997	nd	nd	nd	nd	-	nd	-	-	-	-	-	nd	nd	nd
	24/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
W3	30/05/1997	nd	1	nd	nd	-	nd	-	-	-	-	-	nd	nd	nd
	24/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW01	25/08/2020	nd	nd	nd	nd	nd	nd	nd	280	460	nd	740	170	540	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	470	nd	470	nd	480	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	340	nd	340	nd	380	nd
	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	340	nd	340	nd	370	nd
MW02	25/08/2020	nd	nd	nd	nd	nd	40	130	40,700	31,500	350	72,600	23,300	47,000	1,220
	5/07/2021	nd	nd	nd	nd	nd	30	30	270	660	nd	930	160	760	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	260	260	1,050	nd	1,310	110	1,220	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	740	1,560	nd	2,300	370	1920	nd
MW03	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW04	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW05	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW06	26/08/2020	nd	nd	nd	nd	nd	nd	nd	700	1,670	nd	2,370	330	1,990	nd
	7/07/2021	nd	nd	2	nd	15	nd	nd	1,160	1,740	nd	2,920	690	2,190	70
MW07	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW08	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW09	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW10	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW11	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW12	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW13	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW101	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW102	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW103	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	420	nd	420	nd	440	nd
Statistics															
Samples analysed		58	58	58	58	55	58	55	55	55	55	55	58	58	58
Detects		0	1	1	0	1	2	3	7	11	1	11	7	11	2
% detect		0%	2%	2%	0%	2%	3%	5%	13%	20%	2%	20%	12%	19%	3%
Maximum		<1	1	2	<2	15	40	260	40,700	31,500	350	72,600	23,300	47,000	1,220
Minimum		<1	<1	<2	<2	<2	<20	<20	<100	<100	<100	<100	<100	<100	<100
Criteria - Commercial / Industrial															
ANZG (2018) 95% Level of Species Protection		950	180	80	75	16	-	-	-	-	-	-	-	-	-
GILs Drinking Water		1	800	300	600	-	-	-	-	-	-	-	-	-	-
HSL D 2 m to < 4 m (Sand)		5,000	NL	NL	NL	NL	NL	6,000	NL	-	-	-	-	-	-
HSL D 4 m to < 8 m (Sand)		5,000	NL	NL	NL	NL	NL	6,000	NL	-	-	-	-	-	-
HSL D > 8 m (Sand)		5,000	NL	NL	NL	NL	NL	7,000	NL	-	-	-	-	-	-
HSL D Intrusive Maintenance Worker 2 m to < 4m (Sand)		NL	NL	NL	NL	NL	NL	NL	NL	-	-	-	-	-	-
HSL D Intrusive Maintenance Worker 4 m to < 8 m (Sand)		NL	NL	NL	NL	NL	NL	NL	NL	-	-	-	-	-	-
HSL D Intrusive Maintenance Worker > 8 m (Sand)		NL	NL	NL	NL	NL	NL	NL	NL	-	-	-	-	-	-

Table 11: Historical Groundwater Analytical Summary - Heavy Metals (µg/L)

Sample Identification	Date Sampled	Hardness (mg CaCO$_3$/L)	Hardness Catergory	Arsenic	Cadmium	Chromium	Trivalent Chromium	Hexavalent Chromium	Copper	Lead	Nickel	Zinc	Mercury
LOR		*1*		*1*	*0.1*	*1*	*10*	*10*	*1*	*1*	*1*	*5*	*0.1*
Analytical - Groundwater													
W1	30/05/1997	-	-	nd	nd	nd	-	-	nd	nd	nd	50	nd
	24/08/2020	-	-	nd	nd	1	-	-	nd	nd	nd	nd	nd
	7/07/2021	-	-	nd	nd	1	-	-	nd	nd	nd	22	nd
W2	30/05/1997	-	-	nd	nd	nd	-	-	nd	nd	nd	nd	nd
	24/08/2020	-	-	nd	nd	41	-	-	nd	nd	nd	12	nd
	5/07/2021	-	-	nd	nd	40	-	-	nd	nd	nd	nd	nd
	24/02/2022	-	-	nd	nd	35	-	-	nd	1	nd	nd	nd
	27/04/2023	169	Hard	nd	nd	26	nd	30	nd	nd	nd	nd	nd
W3	30/05/1997	-	-	nd	nd	nd	-	-	nd	nd	nd	nd	nd
	24/08/2020	-	-	nd	nd	7	-	-	nd	nd	nd	21	nd
	7/07/2021	-	-	nd	nd	4	-	-	nd	nd	nd	nd	nd
	24/02/2022	-	-	nd	nd	6	-	-	nd	nd	nd	nd	nd
	27/04/2023	131	Hard	nd	nd	10	nd	10	4	nd	2	11	nd
MW01	25/08/2020	-	-	nd	nd	nd	-	-	nd	nd	2	18	nd
	7/07/2021	-	-	nd	nd	nd	-	-	nd	nd	1	7	nd
	24/02/2022	-	-	nd	nd	nd	-	-	nd	nd	nd	nd	nd
	27/04/2023	488	Extremely hard	nd	nd	nd	nd	nd	nd	nd	2	nd	nd
MW02	25/08/2020	-	-	5	nd	nd	-	-	nd	**13**	3	5	nd
	5/07/2021	-	-	1	nd	nd	-	-	nd	nd	2	8	nd
	23/02/2022	-	-	2	nd	nd	-	-	nd	nd	4	nd	nd
	26/04/2023	214	Very hard	7	nd	nd	nd	nd	nd	nd	2	nd	nd
MW03	25/08/2020	-	-	nd	nd	nd	-	-	1	nd	nd	33	nd
	8/07/2021	-	-	nd	nd	2	-	-	nd	nd	nd	6	nd
	23/02/2022	-	-	nd	nd	2	-	-	nd	nd	nd	7	nd
	26/04/2023	160	Hard	nd	nd	3	nd	nd	nd	nd	nd	nd	nd
MW04	25/08/2020	-	-	nd	nd	5	-	-	nd	nd	nd	20	nd
	8/07/2021	-	-	nd	nd	3	-	-	nd	nd	nd	nd	nd
	23/02/2022	-	-	nd	nd	18	-	-	nd	nd	nd	nd	nd
	26/04/2023	134	Hard	nd	nd	12	nd	20	2	nd	1	nd	nd
MW05	25/08/2020	-	-	nd	nd	1	-	-	nd	nd	nd	46	nd
	8/07/2021	-	-	nd	nd	1	-	-	2	nd	nd	nd	nd
	23/02/2022	-	-	nd	nd	nd	-	-	nd	nd	nd	nd	nd
	26/04/2023	114	Moderate	nd	nd	2	nd	nd	nd	nd	nd	nd	nd
MW06	26/08/2020	-	-	nd	nd	nd	-	-	nd	nd	2	20	nd
	7/07/2021	-	-	1	nd	nd	-	-	nd	nd	4	nd	nd
MW07	26/08/2020	-	-	nd	nd	nd	-	-	nd	nd	nd	14	nd
	7/07/2021	-	-	nd	nd	nd	-	-	nd	nd	nd	nd	nd
	23/02/2022	-	-	nd	nd	nd	-	-	nd	nd	nd	nd	nd
	26/04/2023	198	Very hard	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW08	26/08/2020	-	-	nd	nd	1	-	-	1	2	nd	nd	nd
	7/07/2021	-	-	nd	nd	3	-	-	nd	nd	nd	9	nd
	23/02/2022	-	-	nd	nd	nd	-	-	nd	nd	nd	nd	nd
MW09	5/07/2021	-	-	nd	nd	14	-	-	nd	nd	nd	6	nd
	24/02/2022	-	-	nd	nd	5	-	-	nd	nd	nd	nd	nd
	26/04/2023	97	Moderate	nd	nd	5	nd	nd	nd	nd	nd	nd	nd
MW10	5/07/2021	-	-	nd	nd	nd	-	-	nd	nd	nd	nd	nd
	24/02/2022	-	-	nd	nd	nd	-	-	nd	nd	nd	nd	nd
	27/04/2023	26	Soft	nd	nd	2	nd	nd	nd	nd	nd	nd	nd
MW11	7/07/2021	-	-	nd	nd	32	-	-	nd	nd	nd	nd	nd
MW12	7/07/2021	-	-	nd	nd	11	-	-	nd	nd	nd	nd	nd
	23/02/2022	-	-	nd	nd	10	-	-	nd	3	nd	nd	nd
	26/04/2023	70	Moderate	nd	nd	5	nd	nd	nd	nd	nd	nd	nd
MW13	5/07/2021	-	-	nd	nd	4	-	-	nd	nd	nd	nd	nd
	23/02/2022	-	-	nd	nd	5	-	-	nd	nd	nd	nd	nd
	26/04/2023	138	Hard	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW101	27/04/2023	166	Hard	nd	nd	nd	nd	nd	1	nd	2	nd	nd
MW102	27/04/2023	356	Very hard	nd	nd	2	nd	nd	nd	nd	nd	nd	nd
MW103	27/04/2023	186	Very hard	nd	nd	nd	nd	nd	2	nd	2	6	nd
Statistics													
Samples analysed				58	58	58	15	15	58	58	58	58	58
Detects				5	0	33	0	3	7	4	13	19	0
% detect				9%	0%	57%	0%	20%	12%	7%	22%	33%	0%
Maximum				7	<0.1	41	<10	30	4	13	4	50	<0.1
Minimum				<1	<0.1	<1	<10	<10	<1	<1	<1	<5	<0.1
Criteria - Commercial / Industrial													
ANZG (2018) 95% Level of Species Protection				13**	0.2	1*	3.3	1	1.4	3.4	11	8	0.06***
ANZG (2018) 95% Level of Species Protection (Water hardness correction applied)				-	0.97	-	14.1	-	-	32.2	49.5	36.0	-
GILs Drinking Water				10	2	50	50	50	2,000	**10**	20	-	1

Table 12: Historical Groundwater Analytical Summary - PAHs and Phenols (µg/L)

Sample Identification	Date Sampled	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Phenol	Pentachlorophenol	2-Chlorophenol	Total PAHs	B(a)P TEQ
LOR		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*0.5*	*1*	*1*	*1*	*1*	*2*	*1*	*0.5*	*0.5*
Analytical - Groundwater																						
W1	24/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
W2	24/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
W3	24/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW01	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW02	25/08/2020	nd	nd	nd	nd	28.9	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	28.9	nd
	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW03	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW04	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW05	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW06	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	8.8	nd	1	2.3	1.6	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	13.7	nd

Table 12: Historical Groundwater Analytical Summary - PAHs and Phenols (µg/L)

Sample Identification	Date Sampled	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1.2.3.cd)pyrene	Dibenz(a.h)anthracene	Benzo(g.h.i)perylene	Phenol	Pentachlorophenol	2-Chlorophenol	Total PAHs	B(a)P TEQ
LOR		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*0.5*	*1*	*1*	*1*	*1*	*2*	*1*	*0.5*	*0.5*
Analytical - Groundwater																						
MW07	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW08	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW09	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW10	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	24/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW11	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW12	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW13	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	23/02/2022	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
	26/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW101	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW102	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
MW103	27/04/2023	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	-	-	-	nd	nd
Statistics																						
Samples analysed		55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	12	12	12	55	55
Detects		1	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
% detect		2%	0%	2%	2%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	4%	0%
Maximum		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<2	<1	<0.5	<0.5
Minimum		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<2	<1	<0.5	<0.5
Criteria - Commercial / Industrial																						
ANZG (2018) 95% Level of Species Protection		16	-	-	-	0.6***	0.01***	-	-	-	-	-	-	0.1***	-	-	-	-	-	-	-	-
GILs Drinking Water		-	-	-	-	-	-	-	-	-	-	-	-	0.01	-	-	-	-	10	300	-	-

Table 13: Historical Groundwater Analytical Summary - VOCs (µg/L)

Sample Identification	Date Sampled	1,2-dichloroethane	cis-1.2-Dichloroethene	Chloroethane	Chloroform	Bromodichloromethane	Chloromethane	Trichloroethene	Tetrachloroethene	Vinyl chloride	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	1.2.4-Trimethylbenzene	Bromobenzene	Chlorobenzene	Methyl Ethyl Ketone	2-hexanone (MBK)	p-Isopropyltoluene
LOR		*5*	*5*	*50*	*5*	*5*	*50*	*5*	*5*	*50*	*5*	*5*	*5*	*5*	*5*	*5*	*50*	*50*	*5*
Analytical - Groundwater																			
W1	24/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
W2	24/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	24/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	27/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
W3	24/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	24/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW01	25/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	24/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW02	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	5/07/2021	nd	nd	nd	27	11	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW03	25/08/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	8/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW04	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW05	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	8/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW06	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	14	nd	nd	nd	nd	nd
MW07	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW08	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW09	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	24/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW10	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	24/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	27/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW11	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW12	7/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	5	nd	nd	-	nd	8	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW13	5/07/2021	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	23/02/2022	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
	26/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW101	27/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW102	27/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
MW103	27/04/2023	nd	nd	nd	nd	-	nd	nd	nd	nd	nd	nd	nd	-	nd	nd	nd	nd	nd
-																			
Samples analysed		51	51	51	51	22	51	51	51	51	51	51	51	22	51	51	51	51	51
Detects		0	1	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0	0
% detect		0%	2%	0%	2%	5%	0%	2%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%
Maximum		<5	<5	<50	27	11	<50	8	<5	<50	<5	<5	<5	14	<5	<5	<50	<50	<5
Minimum		<5	<5	<50	<5	<5	<50	<5	<5	<50	<5	<5	<5	<5	<5	<5	<50	<50	<5
Criteria - Commercial / Industrial																			
ANZG (2018) 95% Level of Species Protection		1,900	-	-	370	-	-	-	-	-	160	260	60	85	-	55	-	-	-
GILs Drinking Water		-	60	-	-	250	4	-	-	0.3	1,500	-	40	-	-	300	-	-	-

Table 14: Historical Groundwater Analytical Summary - OCPs (µg/L)

Sample Identification	Date Sampled	Endosulfan (sum)	Heptachlor	Total Chlordane (sum)	Endrin	Methoxychlor	Sum of Aldrin + Dieldrin	Sum of DDD + DDE + DDT	Hexachlorobenzene (HCB)
LOR		*0.01*	*0.005*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*	*0.01*
Analytical - Groundwater									
W1	24/08/2020	-	-	-	-	-	-	-	-
W2	24/08/2020	-	-	-	-	-	-	-	-
W3	24/08/2020	-	-	-	-	-	-	-	-
MW01	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd
MW02	25/08/2020	-	-	-	-	-	-	-	-
MW03	25/08/2020	-	-	-	-	-	-	-	-
MW04	25/08/2020	nd	nd	nd	nd	nd	nd	nd	nd
MW05	25/08/2020	-	-	-	-	-	-	-	-
MW06	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd
MW07	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd
MW08	26/08/2020	nd	nd	nd	nd	nd	nd	nd	nd
Statistics									
Samples analysed		5	5	5	5	5	5	5	5
Detects		0	0	0	0	0	0	0	0
% detect		0%	0%	0%	0%	0%	0%	0%	0%
Maximum		<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Minimum		<0.01	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Criteria - Commercial / Industrial									
ANZG (2018) 95% Level of Species Protection		0.03***	0.01***	0.03***	0.01***	-	-	0.006***	-
GILs Drinking Water		20	-	2	-	-	3	-	-

Table 15: Historical Groundwater analytical summary, PFAS (µg/L)

Monitoring well / sample location	Date / time sampled	Perfluoroalkyl Sulfonic Acids			Perfluoroalkyl Carboxylic Acids					Fluorotelomer Sulfonic Acids				PFAS Sums	
		Perfluorobutane sulfonic acid (PFBS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of PFAS (WA DER List)
LORs		*0.02*	*0.02*	*0.01*	*0.1*	*0.02*	*0.02*	*0.02*	*0.01*	*0.05*	*0.05*	*0.05*	*0.05*	*0.01*	*0.01*
Analytical - Groundwater															
W2	27/4/23	nd	0.01	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.01	0.01
W3	27/4/23	nd	0.01	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.01	0.01
MW01	27/4/23	nd	0.05	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.05	0.05
MW02	26/4/23	nd	0.04	0.08	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.12**	0.12
MW03	26/4/23	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
MW04	26/4/23	nd	0.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.04	0.04
MW05	26/4/23	0.18	**0.89**	***2.16***	nd	0.05	0.18	nd	0.04	nd	nd	nd	nd	***3.05***	3.5
MW07	26/4/23	nd	0.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.04	0.04
MW09	26/4/23	nd	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.02	0.02
MW10	27/4/23	nd	0.01	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.01	0.01
MW12	26/4/23	nd	0.03	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.05	0.05
MW13	26/4/23	nd	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.02	0.02
MW101	26/4/23	nd	0.04	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.04	0.04
MW102	26/4/23	nd	0.02	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	0.02	0.02
MW103	26/4/23	0.03	0.11	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.11**	0.14
Statistics															
Samples analysed		15	15	15	15	15	15	15	15	15	15	15	15	15	15
Detects		2	14	3	0	1	1	0	1	0	0	0	0	14	14
% detect		13%	93%	20%	0%	7%	7%	0%	7%	0%	0%	0%	0%	93%	93%
Maximum		**0.18**	**0.89**	***2.16***	<0.1	0.05	0.18	<0.02	0.04	<0.05	<0.05	<0.05	<0.05	***3.05***	3.5
Minimum		<0.02	<0.01	<0.01	<0.1	<0.02	<0.02	<0.02	<0.01	<0.05	<0.05	<0.05	<0.05	<0.01	<0.01
Criteria - Freshwater															
[1]Drinking Water (Australian Gov. Dept of Health 2019)		-	**0.07**	**0.07**	-	-	-	-	0.56	-	-	-	-	**0.07**	-
[2]Recreational criteria (NHMRC, 2019)		-	2	*2*	-	-	-	-	10	-	-	-	-	*2*	-
Ecological (Freshwater 99% Protection of species) (NEMP 2020 V2.0)***		-	-	0.00023	-	-	-	-	19	-	-	-	-	-	-

Table 16: Historical Groundwater Analytical Summary - Natural Attenuation Parameters

Sample Identification	Date Sampled	Redox as Eh (mV)	Dissolved Oxygen (mg/L)	Sulfate as SO4 - Turbidimetric	Manganese (mg/L)	Ferrous Iron	Nitrate as N	Methane (µg/L)
LOR		*-*	*-*	*1*	*0.001*	*0.05*	*0.01*	*10*
Analytical - Groundwater								
MW01	24/02/2022	239.6	2.56	40	-	nd	0.07	nd
	27/04/2023	99.2	3.17	33	0.359	nd	0.06	nd
MW02	23/02/2022	138.7	3.37	18	-	0.78	nd	656
	26/04/2023	92.3	3.12	18	1.79	2.8	0.35	848
MW04	23/02/2022	227.3	4.21	170	-	nd	0.74	nd
	26/04/2023	85.2	4.68	122	nd	nd	3.78	nd
MW05	23/02/2022	223.6	3.99	134	-	nd	4.25	nd
	26/04/2023	98.2	4.28	151	nd	3.98	1.80	nd
MW06	27/04/2023	101.2	2.78	1	0.975	nd	0.03	637
MW07	26/04/2023	85.2	4.88	67	nd	nd	18.9	nd
MW09	24/02/2022	241.1	4.17	109	-	nd	1.63	nd
	26/04/2023	80.1	3.30	118	0.018	nd	1.06	nd
MW10	24/02/2022	221.5	2.56	42	-	nd	3.89	nd
	27/04/2023	67.1	3.60	40	nd	nd	1.62	nd
MW12	23/02/2022	195.9	3.62	62	-	nd	3.45	nd
	26/04/2023	101.9	3.68	57	nd	nd	2.31	nd
MW13	26/04/2023	79.2	3.88	37	nd	nd	4.09	nd
MW101	27/04/2023	107.2	3.54	135	1.5	nd	23.1	nd
MW102	27/04/2023	116.2	4.12	114	0.018	nd	29.7	nd
MW103	27/04/2023	106.7	3.11	34	0.398	nd	1.01	nd

Appendix H

Laboratory Analytical Certificates

CERTIFICATE OF ANALYSIS

Work Order : **ES2313346**
Client : **CAVVANBA CONSULTING**
Contact : MR DREW WOOD
Address : PO Box 322
NEWCASTLE 2300
Telephone : +61 02 6685 7811
Project : 20025.76
Order number : 20025.76
C-O-C number : ----
Sampler : ZAC LAUGHLAN
Site : ----
Quote number : SYBQ/409/21
No. of samples received : 78
No. of samples analysed : 66

Page : 1 of 43
Laboratory : Environmental Division Sydney
Contact : Karen Coveny
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 21-Apr-2023 19:40
Date Analysis Commenced : 28-Apr-2023
Issue Date : 04-May-2023 16:29

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG005T: Poor precision was obtained for Lead on sample ES2313346 # 014. Confirmed by re-digestion and reanalysis.
- EG005T: Poor precision was obtained for Zinc on sample ES2313346 # 057. Confirmed by re-digestion and reanalysis.
- EG035: Positive Mercury result ES2313346 #6 has been confirmed by reanalysis.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- 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: Analysis of asbestos from swabs and tapes is not covered under the current scope of NATA accreditation.
- EP075(SIM): Poor surrogate recovery due to sample heterogeneity. Confirmed by re-extraction and re-analysis.
- EA200: N/A - Not Applicable

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Sample ID	**SS101**	**SS102**	**SS103**	**SS104**	**SS105**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313346-001**	**ES2313346-002**	**ES2313346-003**	**ES2313346-004**	**ES2313346-005**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**15.9**	**11.4**	**15.3**	**24.2**	**7.6**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**34**	**27**	**29**	**144**	**26**
Cadmium	7440-43-9	1	mg/kg	**6**	<1	<1	**5**	**8**
Chromium	7440-47-3	2	mg/kg	**66**	**27**	**31**	**46**	**54**
Copper	7440-50-8	5	mg/kg	**273**	**143**	**117**	**427**	**488**
Lead	7439-92-1	5	mg/kg	**623**	**222**	**250**	**1130**	**1130**
Nickel	7440-02-0	2	mg/kg	**54**	**16**	**14**	**45**	**35**
Zinc	7440-66-6	5	mg/kg	**664**	**249**	**202**	**866**	**836**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**0.8**	<0.5	<0.5	**1.0**	**0.8**
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	**0.6**	**0.7**
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	**0.6**	**0.7**
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	**0.5**	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	**1.3**	<0.5	<0.5	**2.2**	**2.2**
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Sample ID	**SS101**	**SS102**	**SS103**	**SS104**	**SS105**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-001**	**ES2313346-002**	**ES2313346-003**	**ES2313346-004**	**ES2313346-005**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**450**	<100	**140**	**280**	**3000**
C29 - C36 Fraction	----	100	mg/kg	**520**	<100	**240**	**380**	**3390**
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**970**	<50	**380**	**660**	**6390**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	**70**
>C16 - C34 Fraction	----	100	mg/kg	**840**	**110**	**310**	**520**	**5540**
>C34 - C40 Fraction	----	100	mg/kg	**260**	<100	**150**	**260**	**1820**
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**1100**	**110**	**460**	**780**	**7430**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	**70**
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**72.7**	**80.4**	**75.0**	**74.2**	**84.6**
2-Chlorophenol-D4	93951-73-6	0.5	%	**77.6**	**86.7**	**80.0**	**78.9**	**91.3**
2.4.6-Tribromophenol	118-79-6	0.5	%	**60.0**	**66.0**	**57.4**	**61.8**	**85.0**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**70.6**	**76.8**	**74.5**	**77.2**	**77.8**
Anthracene-d10	1719-06-8	0.5	%	**68.1**	**74.7**	**70.5**	**67.6**	**71.8**
4-Terphenyl-d14	1718-51-0	0.5	%	**74.8**	**83.4**	**80.5**	**76.5**	**77.4**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**97.9**	**98.2**	**98.1**	**106**	**104**
Toluene-D8	2037-26-5	0.2	%	**90.9**	**94.8**	**94.1**	**99.2**	**100**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS101**	**SS102**	**SS103**	**SS104**	**SS105**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-001**	**ES2313346-002**	**ES2313346-003**	**ES2313346-004**	**ES2313346-005**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**99.4**	**105**	**100**	**104**	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)	Sample ID			SS106	SS107	SS108	SS109	SS110
	Sampling date / time			18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ES2313346-006	ES2313346-007	ES2313346-008	ES2313346-009	ES2313346-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**5.3**	**19.8**	**4.6**	**8.8**	**9.8**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**63**	**61**	**11**	**11**	**20**
Cadmium	7440-43-9	1	mg/kg	**15**	<1	**2**	**2**	**3**
Chromium	7440-47-3	2	mg/kg	**130**	**22**	**25**	**71**	**45**
Copper	7440-50-8	5	mg/kg	**288**	**735**	**205**	**209**	**1980**
Lead	7439-92-1	5	mg/kg	**537**	**475**	**266**	**322**	**2260**
Nickel	7440-02-0	2	mg/kg	**51**	**18**	**14**	**19**	**45**
Zinc	7440-66-6	5	mg/kg	**672**	**419**	**200**	**417**	**883**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	**1.0**	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**2.4**	**1.1**	<0.5	**2.9**	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	**2.2**	**1.7**	<0.5	**0.9**	<0.5
Pyrene	129-00-0	0.5	mg/kg	**1.8**	**1.4**	<0.5	**0.8**	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	**0.5**	**1.0**	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	**0.6**	**1.1**	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	**0.5**	**2.7**	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	**0.7**	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	**0.7**	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	**0.6**	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**8.0**	**11.0**	<0.5	**5.6**	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	**0.5**	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**1.0**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.5**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS106**	**SS107**	**SS108**	**SS109**	**SS110**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-006**	**ES2313346-007**	**ES2313346-008**	**ES2313346-009**	**ES2313346-010**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	**60**	<50	<50	**80**	<50
C15 - C28 Fraction	----	100	mg/kg	**1760**	**440**	**240**	**830**	**100**
C29 - C36 Fraction	----	100	mg/kg	**2710**	**650**	**400**	**510**	**150**
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**4530**	**1090**	**640**	**1420**	**250**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	**120**	<50	<50	**160**	<50
>C16 - C34 Fraction	----	100	mg/kg	**3530**	**880**	**510**	**1130**	**200**
>C34 - C40 Fraction	----	100	mg/kg	**1650**	**500**	**220**	**290**	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**5300**	**1380**	**730**	**1580**	**200**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	**120**	<50	<50	**160**	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**71.1**	**79.3**	**84.5**	**79.0**	**77.4**
2-Chlorophenol-D4	93951-73-6	0.5	%	**76.7**	**84.2**	**91.0**	**85.0**	**82.8**
2.4.6-Tribromophenol	118-79-6	0.5	%	**71.3**	**72.7**	**73.7**	**64.8**	**57.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**66.7**	**78.2**	**79.0**	**76.3**	**75.3**
Anthracene-d10	1719-06-8	0.5	%	**58.0**	**73.3**	**76.4**	**69.5**	**72.5**
4-Terphenyl-d14	1718-51-0	0.5	%	**65.5**	**81.1**	**82.8**	**81.5**	**81.9**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**112**	**97.9**	**104**	**105**	**102**
Toluene-D8	2037-26-5	0.2	%	**109**	**91.6**	**100**	**99.2**	**96.6**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS106**	**SS107**	**SS108**	**SS109**	**SS110**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-006**	**ES2313346-007**	**ES2313346-008**	**ES2313346-009**	**ES2313346-010**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**113**	**95.3**	**106**	**102**	**101**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS111**	**SS112**	**SS113**	**SS114**	**SS115**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-011**	**ES2313346-012**	**ES2313346-013**	**ES2313346-014**	**ES2313346-015**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**15.0**	**8.3**	**7.9**	**7.8**	**6.9**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**18**	**163**	**80**	**29**	**97**
Cadmium	7440-43-9	1	mg/kg	**2**	**20**	**7**	**1**	**3**
Chromium	7440-47-3	2	mg/kg	**39**	**206**	**103**	**52**	**75**
Copper	7440-50-8	5	mg/kg	**158**	**2280**	**855**	**394**	**777**
Lead	7439-92-1	5	mg/kg	**498**	**640**	**302**	**523**	**294**
Nickel	7440-02-0	2	mg/kg	**24**	**77**	**52**	**19**	**24**
Zinc	7440-66-6	5	mg/kg	**552**	**2520**	**989**	**761**	**822**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	**0.9**	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	**0.8**	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**3.1**	<0.5	<0.5	**0.7**	**0.8**
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	**2.4**	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	**2.3**	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	**1.2**	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	**1.6**	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	**1.7**	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	**0.5**	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**0.8**	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	**15.3**	<0.5	<0.5	**0.7**	**0.8**
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	**1.2**	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**1.4**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.7**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS111**	**SS112**	**SS113**	**SS114**	**SS115**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-011**	**ES2313346-012**	**ES2313346-013**	**ES2313346-014**	**ES2313346-015**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	**60**	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**820**	**230**	**200**	**270**	**780**
C29 - C36 Fraction	----	100	mg/kg	**600**	**320**	**290**	**280**	**980**
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**1480**	**550**	**490**	**550**	**1760**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	**120**	<50	<50	<50	**50**
>C16 - C34 Fraction	----	100	mg/kg	**1170**	**450**	**390**	**460**	**1460**
>C34 - C40 Fraction	----	100	mg/kg	**370**	**220**	**190**	**180**	**640**
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**1660**	**670**	**580**	**640**	**2150**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	**120**	<50	<50	<50	**50**
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**80.2**	**77.3**	**79.8**	**82.9**	**77.9**
2-Chlorophenol-D4	93951-73-6	0.5	%	**84.9**	**81.8**	**86.6**	**88.6**	**84.6**
2.4.6-Tribromophenol	118-79-6	0.5	%	**71.7**	**59.7**	**65.6**	**65.9**	**67.7**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**74.9**	**89.6**	**90.5**	**95.3**	**89.7**
Anthracene-d10	1719-06-8	0.5	%	**69.9**	**72.2**	**74.1**	**76.6**	**69.5**
4-Terphenyl-d14	1718-51-0	0.5	%	**79.9**	**80.2**	**81.1**	**85.2**	**78.6**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**100**	**102**	**118**	**115**	**109**
Toluene-D8	2037-26-5	0.2	%	**94.7**	**96.5**	**114**	**116**	**104**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS111**	**SS112**	**SS113**	**SS114**	**SS115**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-011**	**ES2313346-012**	**ES2313346-013**	**ES2313346-014**	**ES2313346-015**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**99.5**	**101**	**121**	**117**	**106**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	SS116	SS117	SS118	SS119	SS120
Sampling date / time				18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
				ES2313346-016	**ES2313346-017**	**ES2313346-018**	**ES2313346-019**	**ES2313346-020**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**3.2**	**32.0**	**6.3**	**17.2**	**29.4**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**8**	**22**	**7**	**29**	**17**
Cadmium	7440-43-9	1	mg/kg	<1	**2**	<1	**3**	**1**
Chromium	7440-47-3	2	mg/kg	**34**	**86**	**10**	**44**	**24**
Copper	7440-50-8	5	mg/kg	**231**	**253**	**36**	**196**	**172**
Lead	7439-92-1	5	mg/kg	**234**	**457**	**102**	**902**	**650**
Nickel	7440-02-0	2	mg/kg	**13**	**41**	**6**	**32**	**19**
Zinc	7440-66-6	5	mg/kg	**431**	**790**	**136**	**658**	**407**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	**3.0**	**0.5**	**1.8**	**1.0**
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	**1.4**	<0.5	**1.1**	**0.5**
Pyrene	129-00-0	0.5	mg/kg	<0.5	**1.1**	<0.5	**1.1**	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	**0.6**	<0.5	**0.5**	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	**0.8**	<0.5	**0.9**	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	**0.8**	<0.5	**0.9**	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	**7.7**	**0.5**	**6.3**	**1.5**
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.7**	**0.6**	**0.7**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS116	SS117	SS118	SS119	SS120
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ES2313346-016	ES2313346-017	ES2313346-018	ES2313346-019	ES2313346-020
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	**50**	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**200**	**680**	<100	**480**	**260**
C29 - C36 Fraction	----	100	mg/kg	**240**	**580**	<100	**460**	**220**
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**440**	**1310**	<50	**940**	**480**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	**80**	<50	**50**	<50
>C16 - C34 Fraction	----	100	mg/kg	**340**	**1070**	**130**	**790**	**380**
>C34 - C40 Fraction	----	100	mg/kg	**160**	**350**	<100	**300**	**150**
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**500**	**1500**	**130**	**1140**	**530**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	**80**	<50	**50**	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**79.4**	**68.8**	**81.2**	**79.5**	**75.7**
2-Chlorophenol-D4	93951-73-6	0.5	%	**83.2**	**75.9**	**89.0**	**83.8**	**82.5**
2.4.6-Tribromophenol	118-79-6	0.5	%	**54.6**	**57.6**	**65.1**	**64.6**	**62.0**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**88.4**	**87.6**	**92.7**	**92.4**	**89.9**
Anthracene-d10	1719-06-8	0.5	%	**72.0**	**67.9**	**74.0**	**69.9**	**71.3**
4-Terphenyl-d14	1718-51-0	0.5	%	**79.4**	**77.6**	**84.3**	**81.7**	**80.7**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**106**	**96.2**	**78.3**	**101**	**104**
Toluene-D8	2037-26-5	0.2	%	**102**	**90.8**	**81.6**	**93.5**	**94.5**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**SS116**	**SS117**	**SS118**	**SS119**	**SS120**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-016**	**ES2313346-017**	**ES2313346-018**	**ES2313346-019**	**ES2313346-020**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**108**	**94.8**	**95.5**	**102**	**98.1**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS121**	**SS122**	**SS123**	**SS124**	**SS125**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-021**	**ES2313346-022**	**ES2313346-023**	**ES2313346-024**	**ES2313346-025**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**31.4**	**27.8**	**30.0**	**36.7**	**7.2**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**59**	**24**	**14**	**26**	**7**
Cadmium	7440-43-9	1	mg/kg	**1**	<1	<1	**3**	<1
Chromium	7440-47-3	2	mg/kg	**18**	**23**	**16**	**22**	**28**
Copper	7440-50-8	5	mg/kg	**176**	**115**	**220**	**170**	**126**
Lead	7439-92-1	5	mg/kg	**324**	**226**	**274**	**344**	**142**
Nickel	7440-02-0	2	mg/kg	**17**	**14**	**20**	**29**	**10**
Zinc	7440-66-6	5	mg/kg	**337**	**356**	**200**	**470**	**135**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	**0.9**	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	**0.8**	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	**0.8**	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	**0.6**	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	**0.6**	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	<0.5	<0.5	**3.7**	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS121**	**SS122**	**SS123**	**SS124**	**SS125**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-021**	**ES2313346-022**	**ES2313346-023**	**ES2313346-024**	**ES2313346-025**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**190**	<100	**110**	**340**	**790**
C29 - C36 Fraction	----	100	mg/kg	**360**	<100	<100	**260**	**2000**
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**550**	<50	**110**	**600**	**2790**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**480**	<100	**180**	**520**	**2260**
>C34 - C40 Fraction	----	100	mg/kg	**260**	<100	<100	**190**	**1740**
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**740**	<50	**180**	**710**	**4000**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**69.1**	**68.4**	**66.4**	**67.0**	**76.9**
2-Chlorophenol-D4	93951-73-6	0.5	%	**76.5**	**79.5**	**68.2**	**69.6**	**77.3**
2.4.6-Tribromophenol	118-79-6	0.5	%	**71.3**	**71.7**	**67.4**	**65.9**	**69.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**75.9**	**84.6**	**81.0**	**79.0**	**82.1**
Anthracene-d10	1719-06-8	0.5	%	**71.7**	**82.6**	**79.0**	**76.7**	**76.2**
4-Terphenyl-d14	1718-51-0	0.5	%	**79.4**	**95.4**	**92.1**	**88.4**	**91.3**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**65.3**	**77.5**	**88.6**	**91.6**	**97.9**
Toluene-D8	2037-26-5	0.2	%	**75.3**	**94.3**	**87.9**	**90.8**	**98.0**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL)**			Sample ID	**SS121**	**SS122**	**SS123**	**SS124**	**SS125**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-021**	**ES2313346-022**	**ES2313346-023**	**ES2313346-024**	**ES2313346-025**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**76.5**	**93.8**	**84.1**	**85.6**	**100**

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	SS126	SS127	SS128	SS129	SS130
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00
				ES2313346-026	ES2313346-027	ES2313346-028	ES2313346-029	ES2313346-030
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**8.1**	**4.3**	**7.0**	**9.9**	**23.5**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	<5	**10**	**13**	**6**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**42**	**29**	**43**	**71**	**18**
Copper	7440-50-8	5	mg/kg	**123**	**138**	**97**	**182**	**231**
Lead	7439-92-1	5	mg/kg	**243**	**76**	**112**	**551**	**443**
Nickel	7440-02-0	2	mg/kg	**64**	**49**	**72**	**24**	**12**
Zinc	7440-66-6	5	mg/kg	**272**	**219**	**206**	**606**	**225**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	**0.9**	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	**0.9**	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS126**	**SS127**	**SS128**	**SS129**	**SS130**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-026**	**ES2313346-027**	**ES2313346-028**	**ES2313346-029**	**ES2313346-030**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	**230**	**200**
C29 - C36 Fraction	----	100	mg/kg	**120**	**130**	<100	**240**	**230**
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**120**	**130**	<50	**470**	**430**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**170**	**120**	**120**	**400**	**370**
>C34 - C40 Fraction	----	100	mg/kg	<100	**160**	<100	**220**	**210**
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**170**	**280**	**120**	**620**	**580**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**67.0**	**69.6**	**70.5**	**63.9**	**65.4**
2-Chlorophenol-D4	93951-73-6	0.5	%	**71.6**	**78.2**	**78.1**	**64.2**	**72.3**
2.4.6-Tribromophenol	118-79-6	0.5	%	**59.0**	**65.2**	**67.6**	**50.7**	**59.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**76.7**	**79.6**	**80.0**	**79.0**	**78.3**
Anthracene-d10	1719-06-8	0.5	%	**71.9**	**77.7**	**78.3**	**76.3**	**75.4**
4-Terphenyl-d14	1718-51-0	0.5	%	**85.0**	**89.8**	**89.3**	**92.7**	**89.4**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**85.1**	**93.0**	**84.2**	**106**	**89.3**
Toluene-D8	2037-26-5	0.2	%	**109**	**81.9**	**93.4**	**93.8**	**85.0**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS126	SS127	SS128	SS129	SS130
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ES2313346-026	ES2313346-027	ES2313346-028	ES2313346-029	ES2313346-030
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**98.8**	**102**	**95.4**	**70.1**	**91.3**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS131**	**SS132**	**SS133**	**SS134**	**SS135**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-031**	**ES2313346-032**	**ES2313346-033**	**ES2313346-034**	**ES2313346-035**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**14.6**	**18.3**	**26.5**	**9.5**	**8.4**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**13**	**5**	**6**	**6**	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**55**	**16**	**31**	**16**	**18**
Copper	7440-50-8	5	mg/kg	**428**	**111**	**150**	**210**	**165**
Lead	7439-92-1	5	mg/kg	**779**	**216**	**436**	**710**	**539**
Nickel	7440-02-0	2	mg/kg	**14**	**8**	**9**	**9**	**8**
Zinc	7440-66-6	5	mg/kg	**216**	**149**	**354**	**449**	**192**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	**0.1**	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	**0.9**	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	**1.3**	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	**1.2**	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	**0.6**	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	**0.5**	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	<0.5	<0.5	**4.5**	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**SS131**	**SS132**	**SS133**	**SS134**	**SS135**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313346-031**	**ES2313346-032**	**ES2313346-033**	**ES2313346-034**	**ES2313346-035**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	**120**	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	**170**	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	<50	<50	**290**	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**110**	<100	**250**	**130**	**100**
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	**160**	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**110**	<50	**410**	**130**	**100**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**69.2**	**69.1**	**68.9**	**73.0**	**66.3**
2-Chlorophenol-D4	93951-73-6	0.5	%	**75.7**	**77.0**	**77.8**	**77.2**	**74.5**
2.4.6-Tribromophenol	118-79-6	0.5	%	**58.9**	**61.0**	**63.1**	**61.5**	**57.3**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**79.4**	**80.5**	**80.0**	**82.7**	**79.8**
Anthracene-d10	1719-06-8	0.5	%	**76.8**	**77.9**	**77.8**	**78.9**	**76.3**
4-Terphenyl-d14	1718-51-0	0.5	%	**88.7**	**90.7**	**89.8**	**91.4**	**89.0**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**90.7**	**81.5**	**77.0**	**86.9**	**72.8**
Toluene-D8	2037-26-5	0.2	%	**98.6**	**94.3**	**97.3**	**98.5**	**89.5**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS131**	**SS132**	**SS133**	**SS134**	**SS135**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-031**	**ES2313346-032**	**ES2313346-033**	**ES2313346-034**	**ES2313346-035**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**106**	**91.0**	**96.5**	**103**	**88.2**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS136**	**SS137**	**SS138**	**SS139**	**SS140**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-036**	**ES2313346-037**	**ES2313346-038**	**ES2313346-039**	**ES2313346-040**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**5.9**	**1.8**	**4.1**	**2.2**	**12.0**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**7**	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**21**	**10**	**20**	**7**	**16**
Copper	7440-50-8	5	mg/kg	**210**	**12**	**15**	**94**	**68**
Lead	7439-92-1	5	mg/kg	**352**	**15**	**23**	**90**	**54**
Nickel	7440-02-0	2	mg/kg	**14**	**6**	**7**	**7**	**38**
Zinc	7440-66-6	5	mg/kg	**236**	**52**	**52**	**179**	**128**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	**1.0**	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	**1.1**	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	**0.6**	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	**0.7**	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	**3.4**	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS136**	**SS137**	**SS138**	**SS139**	**SS140**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-036**	**ES2313346-037**	**ES2313346-038**	**ES2313346-039**	**ES2313346-040**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**140**	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	**140**	<100	<100	<100	**200**
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**280**	<50	<50	<50	**200**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**250**	<100	**120**	<100	**210**
>C34 - C40 Fraction	----	100	mg/kg	**100**	<100	<100	<100	**170**
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**350**	<50	**120**	<50	**380**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**68.2**	**67.2**	**68.7**	**71.7**	**61.2**
2-Chlorophenol-D4	93951-73-6	0.5	%	**77.6**	**76.7**	**80.6**	**73.2**	**64.6**
2.4.6-Tribromophenol	118-79-6	0.5	%	**57.3**	**47.8**	**51.3**	**46.2**	**37.0**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**81.4**	**80.2**	**81.6**	**76.9**	**77.1**
Anthracene-d10	1719-06-8	0.5	%	**77.7**	**76.8**	**78.9**	**72.7**	**47.5**
4-Terphenyl-d14	1718-51-0	0.5	%	**89.8**	**91.0**	**92.6**	**87.6**	**69.1**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**81.4**	**82.8**	**78.4**	**79.7**	**111**
Toluene-D8	2037-26-5	0.2	%	**101**	**98.8**	**96.0**	**102**	**87.1**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**SS136**	**SS137**	**SS138**	**SS139**	**SS140**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313346-036**	**ES2313346-037**	**ES2313346-038**	**ES2313346-039**	**ES2313346-040**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**103**	**109**	**105**	**107**	**80.8**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**SS141**	**SS142**	**SS143**	**SS144**	**SS145**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-041**	**ES2313346-042**	**ES2313346-043**	**ES2313346-044**	**ES2313346-045**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**2.5**	**1.9**	**11.9**	**11.7**	**21.6**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	**9**	**7**	**5**
Cadmium	7440-43-9	1	mg/kg	<1	<1	**2**	<1	<1
Chromium	7440-47-3	2	mg/kg	**16**	**14**	**33**	**35**	**13**
Copper	7440-50-8	5	mg/kg	**156**	**65**	**472**	**135**	**153**
Lead	7439-92-1	5	mg/kg	**197**	**121**	**1310**	**163**	**98**
Nickel	7440-02-0	2	mg/kg	**13**	**5**	**20**	**19**	**12**
Zinc	7440-66-6	5	mg/kg	**478**	**154**	**746**	**216**	**205**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	SS141	SS142	SS143	SS144	SS145
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ES2313346-041	ES2313346-042	ES2313346-043	ES2313346-044	ES2313346-045
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	**130**	**330**	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	**480**	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	**130**	**810**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	**190**	**690**	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	**400**	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	**190**	**1090**	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**70.2**	**69.3**	**66.5**	**71.3**	**69.9**
2-Chlorophenol-D4	93951-73-6	0.5	%	**80.1**	**78.9**	**71.9**	**76.1**	**70.7**
2.4.6-Tribromophenol	118-79-6	0.5	%	**51.6**	**53.1**	**56.8**	**56.8**	**48.1**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**84.2**	**83.2**	**76.3**	**82.4**	**80.6**
Anthracene-d10	1719-06-8	0.5	%	**79.7**	**79.3**	**73.4**	**78.0**	**76.0**
4-Terphenyl-d14	1718-51-0	0.5	%	**95.4**	**94.2**	**85.9**	**92.8**	**90.9**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**115**	**123**	**115**	**116**	**115**
Toluene-D8	2037-26-5	0.2	%	**102**	**102**	**93.1**	**94.7**	**96.3**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**SS141**	**SS142**	**SS143**	**SS144**	**SS145**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313346-041**	**ES2313346-042**	**ES2313346-043**	**ES2313346-044**	**ES2313346-045**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**104**	**99.6**	**90.5**	**88.4**	**96.9**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**SS146**	**SS147**	**SS148**	**BH101_0-0.1**	**BH102_0-0.1**
			Sampling date / time	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313346-046**	**ES2313346-047**	**ES2313346-048**	**ES2313346-049**	**ES2313346-051**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**6.2**	<1.0	**4.1**	**13.1**	**30.5**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**10**	<5	<5	**9**	**7**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**22**	**15**	**5**	**13**	**25**
Copper	7440-50-8	5	mg/kg	**87**	**136**	**238**	**60**	**324**
Lead	7439-92-1	5	mg/kg	**57**	**182**	**33**	**153**	**916**
Nickel	7440-02-0	2	mg/kg	**12**	**10**	**8**	**7**	**14**
Zinc	7440-66-6	5	mg/kg	**99**	**863**	**96**	**178**	**400**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	**0.1**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**SS146**	**SS147**	**SS148**	**BH101_0-0.1**	**BH102_0-0.1**
			Sampling date / time	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313346-046**	**ES2313346-047**	**ES2313346-048**	**ES2313346-049**	**ES2313346-051**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	**110**	<100	**110**	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	<50	**110**	<50	**110**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**110**	**160**	<100	**130**	**120**
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	**150**	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**110**	**160**	<50	**280**	**120**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**69.7**	**70.6**	**71.0**	**70.7**	**69.6**
2-Chlorophenol-D4	93951-73-6	0.5	%	**77.6**	**77.6**	**79.0**	**81.1**	**70.9**
2.4.6-Tribromophenol	118-79-6	0.5	%	**54.8**	**56.8**	**51.0**	**61.1**	**54.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**81.2**	**83.9**	**79.6**	**82.5**	**74.8**
Anthracene-d10	1719-06-8	0.5	%	**77.3**	**76.6**	**76.6**	**79.2**	**72.0**
4-Terphenyl-d14	1718-51-0	0.5	%	**91.6**	**92.2**	**90.0**	**92.7**	**85.3**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**118**	**119**	**121**	**80.3**	**112**
Toluene-D8	2037-26-5	0.2	%	**97.5**	**98.1**	**100.0**	**100**	**91.8**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL)**			*Sample ID*	**SS146**	**SS147**	**SS148**	**BH101_0-0.1**	**BH102_0-0.1**
			Sampling date / time	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-046**	**ES2313346-047**	**ES2313346-048**	**ES2313346-049**	**ES2313346-051**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**95.4**	**94.8**	**99.6**	**80.8**	**88.4**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**BH103_0-0.1**	**BH104_0.-0.1**	**BH104_0.3-0.4**	**BH105_0-0.1**	**BH106_0-0.1**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-053**	**ES2313346-055**	**ES2313346-056**	**ES2313346-057**	**ES2313346-059**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**28.0**	**21.6**	**19.4**	**19.0**	**9.3**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**8**	**5**	**8**	**10**	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	**1**	<1
Chromium	7440-47-3	2	mg/kg	**19**	**17**	**12**	**11**	**12**
Copper	7440-50-8	5	mg/kg	**247**	**127**	**626**	**418**	**328**
Lead	7439-92-1	5	mg/kg	**601**	**204**	**1020**	**1140**	**592**
Nickel	7440-02-0	2	mg/kg	**8**	**7**	**11**	**11**	**11**
Zinc	7440-66-6	5	mg/kg	**238**	**163**	**140**	**597**	**324**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.2**	<0.1	<0.1	**0.1**	**0.2**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	**0.8**	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**0.9**	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	**1.0**	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	**1.6**	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	**0.8**	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	**1.0**	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	**1.1**	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	**1.0**	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	**0.6**	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	**1.0**	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	**9.8**	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	**1.3**	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**1.5**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.8**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Sample ID	**BH103_0-0.1**	**BH104_0.-0.1**	**BH104_0.3-0.4**	**BH105_0-0.1**	**BH106_0-0.1**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-053**	**ES2313346-055**	**ES2313346-056**	**ES2313346-057**	**ES2313346-059**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**150**	<100	<100	**110**	<100
C29 - C36 Fraction	----	100	mg/kg	**130**	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**280**	<50	<50	**110**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**240**	<100	**110**	**170**	<100
>C34 - C40 Fraction	----	100	mg/kg	**150**	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**390**	<50	**110**	**170**	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**68.7**	**74.0**	**66.7**	**71.0**	**71.9**
2-Chlorophenol-D4	93951-73-6	0.5	%	**77.3**	**83.9**	**68.4**	**68.8**	**75.4**
2.4.6-Tribromophenol	118-79-6	0.5	%	**63.1**	**58.6**	**41.0**	**46.9**	**48.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**80.2**	**82.7**	**80.5**	**81.2**	**81.7**
Anthracene-d10	1719-06-8	0.5	%	**77.8**	**79.4**	**75.3**	**74.1**	**75.5**
4-Terphenyl-d14	1718-51-0	0.5	%	**89.0**	**93.5**	**90.9**	**91.4**	**92.3**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**117**	**111**	**111**	**110**	**118**
Toluene-D8	2037-26-5	0.2	%	**96.3**	**92.4**	**89.8**	**87.7**	**92.7**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL)**			*Sample ID*	**BH103_0-0.1**	**BH104_0.-0.1**	**BH104_0.3-0.4**	**BH105_0-0.1**	**BH106_0-0.1**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-053**	**ES2313346-055**	**ES2313346-056**	**ES2313346-057**	**ES2313346-059**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**93.3**	**88.8**	**80.6**	**82.0**	**87.0**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**BH107_0-0.1**	**BH108_0-0.1**	**BH108_0.3-0.4**	**BH109_0-0.1**	**BH110_0-0.1**
			Sampling date / time	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-061**	**ES2313346-063**	**ES2313346-064**	**ES2313346-065**	**ES2313346-067**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**6.4**	**5.1**	**28.9**	**17.3**	**23.5**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	**6**	**5**	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**11**	**21**	**5**	**20**	**12**
Copper	7440-50-8	5	mg/kg	**136**	**21**	**602**	**141**	**41**
Lead	7439-92-1	5	mg/kg	**98**	**28**	**1910**	**220**	**128**
Nickel	7440-02-0	2	mg/kg	**8**	**8**	**10**	**7**	**4**
Zinc	7440-66-6	5	mg/kg	**186**	**41**	**49**	**174**	**130**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	**0.2**	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Sample ID	**BH107_0-0.1**	**BH108_0-0.1**	**BH108_0.3-0.4**	**BH109_0-0.1**	**BH110_0-0.1**
			Sampling date / time	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-061**	**ES2313346-063**	**ES2313346-064**	**ES2313346-065**	**ES2313346-067**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	<50	<50	<50	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**75.8**	**68.0**	**66.3**	**65.0**	**65.8**
2-Chlorophenol-D4	93951-73-6	0.5	%	**76.9**	**68.0**	**71.2**	**70.6**	**69.7**
2.4.6-Tribromophenol	118-79-6	0.5	%	**48.4**	**51.3**	**57.4**	**54.2**	**52.5**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**81.3**	**83.4**	**71.3**	**81.5**	**79.8**
Anthracene-d10	1719-06-8	0.5	%	**76.5**	**79.6**	**70.3**	**77.9**	**77.5**
4-Terphenyl-d14	1718-51-0	0.5	%	**92.2**	**94.5**	**77.8**	**91.4**	**90.9**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**119**	**124**	**99.3**	**118**	**108**
Toluene-D8	2037-26-5	0.2	%	**96.6**	**103**	**75.6**	**94.4**	**87.5**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**BH107_0-0.1**	**BH108_0-0.1**	**BH108_0.3-0.4**	**BH109_0-0.1**	**BH110_0-0.1**
			Sampling date / time	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-061**	**ES2313346-063**	**ES2313346-064**	**ES2313346-065**	**ES2313346-067**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**89.7**	**99.7**	**67.0**	**85.7**	**80.3**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL)**

			Sample ID	**BH111_0-0.1**	**TP101_0-0.1**	**TP102_0-0.1**	**TP103_0-0.1**	**TP104_0-0.1**
			Sampling date / time	20-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-069**	**ES2313346-071**	**ES2313346-073**	**ES2313346-075**	**ES2313346-077**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**16.6**	**14.2**	**17.4**	**16.8**	**19.6**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**11**	**19**	**18**	**20**	**282**
Cadmium	7440-43-9	1	mg/kg	<1	<1	**7**	<1	<1
Chromium	7440-47-3	2	mg/kg	**18**	**24**	**36**	**16**	**284**
Copper	7440-50-8	5	mg/kg	**203**	**63**	**206**	**169**	**472**
Lead	7439-92-1	5	mg/kg	**431**	**143**	**669**	**381**	**427**
Nickel	7440-02-0	2	mg/kg	**11**	**9**	**26**	**11**	**36**
Zinc	7440-66-6	5	mg/kg	**296**	**167**	**248**	**299**	**245**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	**0.1**	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	**1.5**	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	**1.2**	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	**1.3**	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	**0.6**	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	**0.8**	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	**0.7**	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	<0.5	<0.5	**6.1**	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.7**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**BH111_0-0.1**	**TP101_0-0.1**	**TP102_0-0.1**	**TP103_0-0.1**	**TP104_0-0.1**
			Sampling date / time	20-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-069**	**ES2313346-071**	**ES2313346-073**	**ES2313346-075**	**ES2313346-077**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	**120**	**250**	**140**
C29 - C36 Fraction	----	100	mg/kg	**130**	<100	**110**	**160**	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**130**	<50	**230**	**410**	**140**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**190**	<100	**190**	**350**	**190**
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	**110**	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**190**	<50	**190**	**460**	**190**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**88.6**	**80.8**	**81.1**	**83.6**	**78.4**
2-Chlorophenol-D4	93951-73-6	0.5	%	**96.8**	**83.1**	**84.0**	**88.0**	**83.2**
2.4.6-Tribromophenol	118-79-6	0.5	%	**92.8**	**50.5**	**58.0**	**60.2**	**55.3**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**85.6**	**75.0**	**78.9**	**81.4**	**79.6**
Anthracene-d10	1719-06-8	0.5	%	**108**	**72.4**	**73.0**	**78.7**	**76.3**
4-Terphenyl-d14	1718-51-0	0.5	%	**95.6**	**71.5**	**74.5**	**77.7**	**75.7**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**88.3**	**90.3**	**95.1**	**97.1**	**96.2**
Toluene-D8	2037-26-5	0.2	%	**94.9**	**96.1**	**97.1**	**101**	**90.7**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL)**

			Sample ID	**BH111_0-0.1**	**TP101_0-0.1**	**TP102_0-0.1**	**TP103_0-0.1**	**TP104_0-0.1**
			Sampling date / time	20-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313346-069**	**ES2313346-071**	**ES2313346-073**	**ES2313346-075**	**ES2313346-077**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**95.2**	**99.6**	**99.3**	**102**	**92.3**

Analytical Results

Sub-Matrix: **SOLID**
(Matrix: **SOLID)**

			Sample ID	**BH104_0.3-0.4**	----	----	----	----
			Sampling date / time	19-Apr-2023 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313346-078**	--------	--------	--------	--------
				Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	**Yes**	----	----	----	----
Asbestos Type	1332-21-4	-	--	**Ch**	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**N/A**	----	----	----	----
Sample weight (dry)	----	0.01	g	**70.4**	----	----	----	----
Synthetic Mineral Fibre	----	-	-	**No**	----	----	----	----
Organic Fibre	----	-	-	**Yes**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	**B.SCHRADER**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOLID**

Method: Compound	*Sample ID - Sampling date / time*	*Analytical Results*
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	BH104_0.3-0.4 - 19-Apr-2023 00:00	One piece of asbestos cement sheeting approximately 85x75x5mm.

Surrogate Control Limits

Sub-Matrix: **SOIL**

		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	63	125
Toluene-D8	2037-26-5	67	124
4-Bromofluorobenzene	460-00-4	66	131

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOLID) EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples

QUALITY CONTROL REPORT

Work Order	: **ES2313346**	Page	: 1 of 26
Client	: **CAVVANBA CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: MR DREW WOOD	Contact	: Karen Coveny
Address	: PO Box 322 NEWCASTLE 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 6685 7811	Telephone	: +61-2-8784 8555
Project	: 20025.76	Date Samples Received	: 21-Apr-2023
Order number	: 20025.76	Date Analysis Commenced	: 28-Apr-2023
C-O-C number	: ----	Issue Date	: 04-May-2023
Sampler	: ZAC LAUGHLAN		
Site	: ----		
Quote number	: SYBQ/409/21		
No. of samples received	: 78		
No. of samples analysed	: 66		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5017754)									
ES2313346-014	SS114	EG005T: Cadmium	7440-43-9	1	mg/kg	1	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	52	58	11.3	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	19	19	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	29	40	31.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	394	466	16.7	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	523	# 640	20.1	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	761	752	1.2	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5018267)									
ES2313346-001	SS101	EG005T: Cadmium	7440-43-9	1	mg/kg	6	10	44.8	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	66	61	7.6	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	54	64	18.6	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	34	34	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	273	276	1.1	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	623	582	6.8	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	664	666	0.3	0% - 20%
ES2313346-011	SS111	EG005T: Cadmium	7440-43-9	1	mg/kg	2	3	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	39	36	8.8	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	24	20	17.4	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	18	40	74.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	158	168	6.0	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	498	472	5.4	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	552	454	19.4	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5018269)									
ES2313346-022	SS122	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5018269) - continued									
ES2313346-022	SS122	EG005T: Chromium	7440-47-3	2	mg/kg	23	20	12.7	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	14	12	14.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	24	22	7.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	115	100	13.3	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	226	206	9.1	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	356	355	0.0	0% - 20%
ES2313346-032	SS132	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	16	18	9.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	8	8	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	5	5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	111	106	4.8	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	216	207	4.3	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	149	148	0.0	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5018458)									
ES2313346-033	SS133	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	31	29	8.3	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	9	8	17.4	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	150	126	17.2	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	436	386	12.3	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	354	311	12.7	0% - 20%
ES2313346-043	SS143	EG005T: Cadmium	7440-43-9	1	mg/kg	2	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	33	24	32.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	20	16	20.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	9	10	17.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	472	484	2.4	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	1310	1340	2.2	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	746	645	14.5	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5018460)									
ES2313663-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	6	8	26.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	5	5	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	31	35	12.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	124	135	9.0	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	140	146	4.8	0% - 20%
ES2313346-057	BH105_0-0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	1	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	14	21.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	13	17.9	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	10	10	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5018460) - continued									
ES2313346-057	BH105_0-0.1	EG005T: Copper	7440-50-8	5	mg/kg	418	424	1.5	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	1140	1030	9.5	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	597	# 483	21.2	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5020839)									
ES2313663-019	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	41	47	13.8	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	20	22	11.8	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	7	7	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	11	10	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	21	18	14.3	No Limit
EB2312037-020	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	11	4	90.5	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	5	6	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	7	32.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	8	11	34.4	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5017763)									
ES2313482-001	Anonymous	EA055: Moisture Content	----	0.1	%	4.7	4.5	3.8	No Limit
ES2313587-005	Anonymous	EA055: Moisture Content	----	0.1	%	<1.0	<1.0	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5018271)									
ES2313346-003	SS103	EA055: Moisture Content	----	0.1	%	15.3	15.5	1.2	0% - 50%
ES2313346-015	SS115	EA055: Moisture Content	----	0.1	%	6.9	7.5	8.1	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5018272)									
ES2313346-024	SS124	EA055: Moisture Content	----	0.1	%	36.7	36.9	0.3	0% - 20%
ES2313943-001	Anonymous	EA055: Moisture Content	----	0.1	%	18.2	18.9	4.0	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5018468)									
ES2313346-035	SS135	EA055: Moisture Content	----	0.1	%	8.4	8.0	5.0	No Limit
ES2313346-046	SS146	EA055: Moisture Content	----	0.1	%	6.2	7.2	15.2	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5018469)									
ES2313346-063	BH108_0-0.1	EA055: Moisture Content	----	0.1	%	5.1	4.8	5.6	No Limit
ES2313663-008	Anonymous	EA055: Moisture Content	----	0.1	%	15.2	14.4	5.4	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5020825)									
ES2313346-075	TP103_0-0.1	EA055: Moisture Content	----	0.1	%	16.8	16.2	3.7	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5020847)									
ES2313346-069	BH111_0-0.1	EA055: Moisture Content	----	0.1	%	16.6	17.5	5.1	0% - 50%
ES2313663-030	Anonymous	EA055: Moisture Content	----	0.1	%	11.5	11.6	1.1	0% - 50%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5017756)									
ES2313346-014	SS114	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5018268)									
ES2313346-001	SS101	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2313346-011	SS111	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5018270)									
ES2313346-032	SS132	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5018459)									
ES2313346-033	SS133	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2313346-043	SS143	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5018461)									
ES2313346-057	BH105_0-0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	0.0	No Limit
ES2313744-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5020840)									
EB2312037-020	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2313845-003	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014056)									
ES2313346-001	SS101	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	0.8	<0.5	40.9	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	1.3	<0.5	88.9	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2313346-011	SS111	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	0.9	0.8	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	0.8	<0.5	40.1	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014056) - continued									
ES2313346-011	SS111	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	3.1	3.1	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	2.4	2.3	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	2.3	2.0	11.1	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	1.2	1.1	12.5	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	1.6	1.5	9.2	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	1.7	1.6	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.8	0.6	16.5	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	15.3	13.0	16.3	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.2	0.9	26.6	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014062)									
ES2313346-021	SS121	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2313346-031	SS131	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014062) - continued									
ES2313346-031	SS131	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014064)									
ES2313346-041	SS141	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2313346-053	BH103_0-0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014064) - continued									
ES2313346-053	BH103_0-0.1	EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	0.8	0.7	17.4	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	0.9	0.7	24.1	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	1.0	0.8	23.5	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	1.6	1.4	13.8	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	0.8	0.6	22.2	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	1.0	0.8	13.4	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	1.1	1.0	9.6	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.0	0.9	10.7	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.6	0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	1.0	0.8	15.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	9.8	8.2	17.8	0% - 50%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.3	1.1	12.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014071)									
ES2313346-071	TP101_0-0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014071) - continued									
ES2313408-011	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	0.6	19.7	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	0.6	18.2	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014073)									
ES2313346-069	BH111_0-0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014073) - continued									
ES2313346-069	BH111_0-0.1	EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2313408-060	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5014057)									
ES2313346-001	SS101	EP071: C15 - C28 Fraction	----	100	mg/kg	450	420	7.9	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	520	530	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313346-011	SS111	EP071: C15 - C28 Fraction	----	100	mg/kg	820	920	12.1	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	600	710	16.7	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	60	60	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5014061)									
ES2313346-021	SS121	EP071: C15 - C28 Fraction	----	100	mg/kg	190	260	28.9	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	360	340	6.1	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313346-031	SS131	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5014063)									
ES2313346-041	SS141	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313346-053	BH103_0-0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	150	180	21.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5014063) - continued									
ES2313346-053	BH103_0-0.1	EP071: C29 - C36 Fraction	----	100	mg/kg	130	140	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5014070)									
ES2313346-071	TP101_0-0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313408-011	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	130	130	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5014072)									
ES2313346-069	BH111_0-0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	130	110	13.8	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313408-060	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5016563)									
ES2313346-001	SS101	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2313346-011	SS111	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5016567)									
ES2313346-021	SS121	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2313346-031	SS131	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5016579)									
ES2313346-041	SS141	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2313346-053	BH103_0-0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5021159)									
ES2313346-069	BH111_0-0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2314141-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5014057)									
ES2313346-001	SS101	EP071: >C16 - C34 Fraction	----	100	mg/kg	840	770	8.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	260	290	10.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313346-011	SS111	EP071: >C16 - C34 Fraction	----	100	mg/kg	1170	1390	17.2	0% - 50%
		EP071: >C34 - C40 Fraction	----	100	mg/kg	370	450	20.7	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	120	110	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5014061)									
ES2313346-021	SS121	EP071: >C16 - C34 Fraction	----	100	mg/kg	480	530	10.2	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	260	240	9.3	No Limit

Sub-Matrix: **SOIL**				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5014061) - continued									
ES2313346-021	SS121	EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313346-031	SS131	EP071: >C16 - C34 Fraction	----	100	mg/kg	110	120	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5014063)									
ES2313346-041	SS141	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313346-053	BH103_0-0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	240	280	15.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	150	130	16.1	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5014070)									
ES2313346-071	TP101_0-0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313408-011	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	190	180	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5014072)									
ES2313346-069	BH111_0-0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	190	160	17.9	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313408-060	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5016563)									
ES2313346-001	SS101	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2313346-011	SS111	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5016567)									
ES2313346-021	SS121	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2313346-031	SS131	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5016579)									
ES2313346-041	SS141	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2313346-053	BH103_0-0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5021159)									
ES2313346-069	BH111_0-0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2314141-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 5016563)									

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
				Laboratory Duplicate (DUP) Report					
EP080: BTEXN (QC Lot: 5016563) - continued									
ES2313346-001	SS101	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2313346-011	SS111	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 5016567)									
ES2313346-021	SS121	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2313346-031	SS131	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 5016579)									
ES2313346-041	SS141	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2313346-053	BH103_0-0.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 5016579) - continued									
ES2313346-053	BH103_0-0.1	EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 5021159)									
ES2313346-069	BH111_0-0.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2314141-006	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5017754)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	94.9	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	80.8	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	103	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	103	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	100	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	94.0	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	90.8	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018267)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	92.0	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	90.4	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	98.2	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	96.6	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	93.3	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	91.2	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	90.1	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018269)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	91.7	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	91.0	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	106	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	101	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	95.6	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	95.9	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	90.1	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018458)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	88.1	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	86.3	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	102	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	94.1	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	93.2	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	93.0	80.0	120

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018458) - continued								
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	89.0	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018460)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	108	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	123	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	119	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	111	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	116	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	110	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	108	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5020839)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	88.1	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	73.4	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	99.6	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	89.1	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	86.0	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	88.2	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	81.8	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5017756)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	91.6	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5018268)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	82.4	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5018270)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	88.9	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5018459)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	72.4	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5018461)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	120	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5020840)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	83.3	70.0	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014056)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	87.7	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	82.9	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	88.8	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	88.9	72.0	126

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014056) - continued								
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	91.9	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	90.4	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	92.2	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	89.4	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	85.4	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	93.3	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	88.1	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	91.9	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	71.4	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	80.1	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	75.9	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	81.5	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014062)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	99.2	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	89.8	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	91.6	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	93.3	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	100	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	80.6	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	103	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	101	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.1	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	103	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	90.0	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	107	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	79.0	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	86.2	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	81.3	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	87.4	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014064)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	93.9	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	86.6	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	90.7	73.0	127

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014064) - continued								
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	92.2	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	93.7	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	81.2	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	95.0	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	91.9	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	92.0	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	93.1	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	91.3	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	93.0	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	74.9	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	82.1	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	78.5	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	85.3	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014071)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	88.9	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	84.0	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	89.4	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	89.8	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	92.0	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	87.2	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	93.9	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	93.1	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	84.6	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	89.4	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	85.4	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	95.3	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	79.8	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	91.5	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	88.6	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	88.3	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014073)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	95.8	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	91.1	72.0	124

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014073) - continued								
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	94.8	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	89.2	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	104	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	89.4	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	105	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	103	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.0	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	97.6	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	94.4	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	104	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	92.2	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	96.2	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	101	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	102	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014057)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	94.5	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	90.2	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	109	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014061)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	113	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	104	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	97.2	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014063)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	107	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	106	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	97.2	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014070)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	107	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	96.0	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	92.5	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014072)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	89.6	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	100	77.0	131

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*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014072) - continued								
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	92.2	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5016563)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	116	72.2	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5016567)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	123	72.2	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5016579)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	110	72.2	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5021159)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	99.7	72.2	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014057)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	100.0	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	87.2	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	87.9	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014061)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	110	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	107	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	106	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014063)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	109	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	108	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	104	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014070)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	91.4	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	101	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	101	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014072)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	103	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	88.4	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	106	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5016563)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	116	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5016567)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	123	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5016579)								

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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5016579) - continued								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	110	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5021159)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	103	72.4	133
EP080: BTEXN (QCLot: 5016563)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	107	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	109	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	110	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	113	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	109	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	116	78.8	122
EP080: BTEXN (QCLot: 5016567)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	108	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	120	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	112	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	114	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	109	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	106	78.8	122
EP080: BTEXN (QCLot: 5016579)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	106	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	98.3	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	101	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	102	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	110	78.8	122
EP080: BTEXN (QCLot: 5021159)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	106	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	105	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	101	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	107	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	104	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	102	78.8	122

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	*SpikeRecovery(%)*	*Acceptable Limits (%)*	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5017754)							
ES2313304-004	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	102	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	87.5	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	106	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	70.0	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	87.5	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	80.7	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018267)							
ES2313346-001	SS101	EG005T: Arsenic	7440-38-2	50 mg/kg	73.4	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.1	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	127	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	76.3	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	128	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	85.7	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	70.2	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018269)							
ES2313346-022	SS122	EG005T: Arsenic	7440-38-2	50 mg/kg	91.4	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	95.2	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	85.7	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	89.7	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	83.7	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	91.1	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	76.4	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018458)							
ES2313346-033	SS133	EG005T: Arsenic	7440-38-2	50 mg/kg	95.9	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	96.0	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	100	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	92.8	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	90.5	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	92.7	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	68.6	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018460)							
ES2313346-057	BH105_0-0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	107	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5018460) - continued							
ES2313346-057	BH105_0-0.1	EG005T: Cadmium	7440-43-9	50 mg/kg	106	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	112	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	124	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	124	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	107	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	120	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5020839)							
EB2312037-020	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	92.5	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	99.0	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	86.2	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	97.8	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	98.2	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	96.7	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	101	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5017756)							
ES2313346-014	SS114	EG035T: Mercury	7439-97-6	5 mg/kg	91.8	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5018268)							
ES2313346-001	SS101	EG035T: Mercury	7439-97-6	5 mg/kg	87.2	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5018270)							
ES2313346-022	SS122	EG035T: Mercury	7439-97-6	5 mg/kg	99.2	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5018459)							
ES2313346-033	SS133	EG035T: Mercury	7439-97-6	5 mg/kg	91.1	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5018461)							
ES2313346-057	BH105_0-0.1	EG035T: Mercury	7439-97-6	5 mg/kg	83.8	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5020840)							
EB2312037-020	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	103	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014056)							
ES2313346-001	SS101	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	93.9	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	94.3	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014062)							
ES2313346-021	SS121	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	101	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	111	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014064)							
ES2313346-041	SS141	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	92.9	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	95.4	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014071)							
ES2313346-071	TP101_0-0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	95.9	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	99.4	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014073)							
ES2313346-069	BH111_0-0.1	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	101	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	98.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014057)							
ES2313346-001	SS101	EP071: C10 - C14 Fraction	----	480 mg/kg	114	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	116	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	118	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014061)							
ES2313346-021	SS121	EP071: C10 - C14 Fraction	----	480 mg/kg	122	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	117	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	120	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014063)							
ES2313346-041	SS141	EP071: C10 - C14 Fraction	----	480 mg/kg	111	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	112	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	117	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014070)							
ES2313346-071	TP101_0-0.1	EP071: C10 - C14 Fraction	----	480 mg/kg	99.2	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	83.8	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	110	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014072)							
ES2313346-069	BH111_0-0.1	EP071: C10 - C14 Fraction	----	480 mg/kg	110	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	110	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	106	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5016563)							
ES2313346-001	SS101	EP080: C6 - C9 Fraction	----	32.5 mg/kg	108	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5016567)							
ES2313346-021	SS121	EP080: C6 - C9 Fraction	----	32.5 mg/kg	113	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5016579)							
ES2313346-041	SS141	EP080: C6 - C9 Fraction	----	32.5 mg/kg	122	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5021159)							
ES2313346-069	BH111_0-0.1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	83.9	60.4	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014057)							
ES2313346-001	SS101	EP071: >C10 - C16 Fraction	----	860 mg/kg	105	73.0	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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014057) - continued							
ES2313346-001	SS101	EP071: >C16 - C34 Fraction	----	4320 mg/kg	120	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	98.5	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014061)							
ES2313346-021	SS121	EP071: >C10 - C16 Fraction	----	860 mg/kg	112	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	121	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	115	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014063)							
ES2313346-041	SS141	EP071: >C10 - C16 Fraction	----	860 mg/kg	118	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	125	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	118	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014070)							
ES2313346-071	TP101_0-0.1	EP071: >C10 - C16 Fraction	----	860 mg/kg	99.3	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	94.9	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	116	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014072)							
ES2313346-069	BH111_0-0.1	EP071: >C10 - C16 Fraction	----	860 mg/kg	98.3	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	109	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	90.5	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5016563)							
ES2313346-001	SS101	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	105	61.1	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5016567)							
ES2313346-021	SS121	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	112	61.1	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5016579)							
ES2313346-041	SS141	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	118	61.1	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5021159)							
ES2313346-069	BH111_0-0.1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	85.2	61.1	142
EP080: BTEXN (QCLot: 5016563)							
ES2313346-001	SS101	EP080: Benzene	71-43-2	2.5 mg/kg	99.5	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	102	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	106	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	105	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	105	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	86.7	61.1	115
EP080: BTEXN (QCLot: 5016567)							
ES2313346-021	SS121	EP080: Benzene	71-43-2	2.5 mg/kg	101	62.1	122

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 5016567) - continued							
ES2313346-021	SS121	EP080: Toluene	108-88-3	2.5 mg/kg	101	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	105	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	105	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	114	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	94.7	61.1	115
EP080: BTEXN (QCLot: 5016579)							
ES2313346-041	SS141	EP080: Benzene	71-43-2	2.5 mg/kg	104	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	104	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	108	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	107	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	109	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	74.6	61.1	115
EP080: BTEXN (QCLot: 5021159)							
ES2313346-069	BH111_0-0.1	EP080: Benzene	71-43-2	2.5 mg/kg	88.2	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	89.0	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	93.2	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	91.2	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	91.3	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	77.9	61.1	115

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2313346**	Page	: 1 of 16
Client	: **CAVVANBA CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: MR DREW WOOD	Telephone	: +61-2-8784 8555
Project	: 20025.76	Date Samples Received	: 21-Apr-2023
Site	: ----	Issue Date	: 04-May-2023
Sampler	: ZAC LAUGHLAN	No. of samples received	: 78
Order number	: 20025.76	No. of samples analysed	: 66

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	**Analyte**	CAS Number	Data	Limits	**Comment**
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2313346--014	SS114	**Lead**	7439-92-1	20.1 %	0% - 20%	**RPD exceeds LOR based limits**
EG005(ED093)T: Total Metals by ICP-AES	ES2313346--057	BH105_0-0.1	**Zinc**	7440-66-6	21.2 %	0% - 20%	**RPD exceeds LOR based limits**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	**Analyte**	CAS Number	Data	Limits	**Comment**
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES2313346-040	SS140	**Phenol-d6**	13127-88-3	61.2 %	63.0-123 %	**Recovery less than lower data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES2313346-029	SS129	**2-Chlorophenol-D4**	93951-73-6	64.2 %	66.0-122 %	**Recovery less than lower data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES2313346-040	SS140	**2-Chlorophenol-D4**	93951-73-6	64.6 %	66.0-122 %	**Recovery less than lower data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES2313346-040	SS140	**2.4.6-Tribromophenol**	118-79-6	37.0 %	40.0-138 %	**Recovery less than lower data quality objective**
EP075(SIM)T: PAH Surrogates	ES2313346-006	SS106	**2-Fluorobiphenyl**	321-60-8	66.7 %	70.0-122 %	**Recovery less than lower data quality objective**
EP075(SIM)T: PAH Surrogates	ES2313346-006	SS106	**Anthracene-d10**	1719-06-8	58.0 %	66.0-128 %	**Recovery less than lower data quality objective**
EP075(SIM)T: PAH Surrogates	ES2313346-040	SS140	**Anthracene-d10**	1719-06-8	47.5 %	66.0-128 %	**Recovery less than lower data quality objective**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC 10	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Mercury by FIMS	10	103	9.71	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.

Matrix: **SOIL**

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

Method	*Sample Date*	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) TP101_0-0.1, TP102_0-0.1, TP103_0-0.1, TP104_0-0.1	**18-Apr-2023**	**----**	----	----	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EA055) SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112, SS113, SS114, SS115, SS116, SS117, SS118, SS119, SS120, SS121, SS122, SS123, SS124, SS125, SS126, SS127, SS128, SS129, BH101_0-0.1, BH106_0-0.1	**18-Apr-2023**	**----**	----	----	**28-Apr-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EA055) SS130, SS131, SS132, SS133, SS134, SS135, SS136, SS137, SS138, SS139, SS140, SS141, SS142, SS143, BH102_0-0.1, BH103_0-0.1, BH104_0.-0.1, BH104_0.3-0.4, BH105_0-0.1	**19-Apr-2023**	**----**	----	----	**28-Apr-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EA055) BH111_0-0.1	**20-Apr-2023**	**----**	----	----	**02-May-2023**	04-May-2023	✓
Soil Glass Jar - Unpreserved (EA055) SS144, SS145, SS146, SS147, SS148, BH107_0-0.1, BH108_0-0.1, BH108_0.3-0.4, BH109_0-0.1, BH110_0-0.1	**20-Apr-2023**	**----**	----	----	**28-Apr-2023**	04-May-2023	✓

Matrix: **SOIL**

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

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
***Container** / Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) TP101_0-0.1, TP102_0-0.1, TP103_0-0.1, TP104_0-0.1	**18-Apr-2023**	**02-May-2023**	15-Oct-2023	✓	**02-May-2023**	15-Oct-2023	✓
Soil Glass Jar - Unpreserved (EG005T) SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112, SS113, SS114, SS115, SS116, SS117, SS118, SS119, SS120, SS121, SS122, SS123, SS124, SS125, SS126, SS127, SS128, SS129, BH101_0-0.1, BH106_0-0.1	**18-Apr-2023**	**28-Apr-2023**	15-Oct-2023	✓	**01-May-2023**	15-Oct-2023	✓
Soil Glass Jar - Unpreserved (EG005T) SS130, SS131, SS132	**19-Apr-2023**	**28-Apr-2023**	16-Oct-2023	✓	**01-May-2023**	16-Oct-2023	✓
Soil Glass Jar - Unpreserved (EG005T) SS133, SS134, SS135, SS136, SS137, SS138, SS139, SS140, SS141, SS142, SS143, BH102_0-0.1, BH103_0-0.1, BH104_0.-0.1, BH104_0.3-0.4, BH105_0-0.1	**19-Apr-2023**	**29-Apr-2023**	16-Oct-2023	✓	**01-May-2023**	16-Oct-2023	✓
Soil Glass Jar - Unpreserved (EG005T) BH111_0-0.1	**20-Apr-2023**	**02-May-2023**	17-Oct-2023	✓	**02-May-2023**	17-Oct-2023	✓
Soil Glass Jar - Unpreserved (EG005T) SS144, SS145, SS146, SS147, SS148, BH107_0-0.1, BH108_0-0.1, BH108_0.3-0.4, BH109_0-0.1, BH110_0-0.1	**20-Apr-2023**	**29-Apr-2023**	17-Oct-2023	✓	**01-May-2023**	17-Oct-2023	✓

Matrix: **SOIL**

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

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
***Container** / Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) TP101_0-0.1, TP102_0-0.1, TP103_0-0.1, TP104_0-0.1	**18-Apr-2023**	**02-May-2023**	16-May-2023	✓	**03-May-2023**	16-May-2023	✓
Soil Glass Jar - Unpreserved (EG035T) SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112, SS113, SS114, SS115, SS116, SS117, SS118, SS119, SS120, SS121, SS122, SS123, SS124, SS125, SS126, SS127, SS128, SS129, BH101_0-0.1, BH106_0-0.1	**18-Apr-2023**	**28-Apr-2023**	16-May-2023	✓	**02-May-2023**	16-May-2023	✓
Soil Glass Jar - Unpreserved (EG035T) SS130, SS131, SS132	**19-Apr-2023**	**28-Apr-2023**	17-May-2023	✓	**02-May-2023**	17-May-2023	✓
Soil Glass Jar - Unpreserved (EG035T) SS133, SS134, SS135, SS136, SS137, SS138, SS139, SS140, SS141, SS142, SS143, BH102_0-0.1, BH103_0-0.1, BH104_0.-0.1, BH104_0.3-0.4, BH105_0-0.1	**19-Apr-2023**	**29-Apr-2023**	17-May-2023	✓	**02-May-2023**	17-May-2023	✓
Soil Glass Jar - Unpreserved (EG035T) BH111_0-0.1	**20-Apr-2023**	**02-May-2023**	18-May-2023	✓	**03-May-2023**	18-May-2023	✓
Soil Glass Jar - Unpreserved (EG035T) SS144, SS145, SS146, SS147, SS148, BH107_0-0.1, BH108_0-0.1, BH108_0.3-0.4, BH109_0-0.1, BH110_0-0.1	**20-Apr-2023**	**29-Apr-2023**	18-May-2023	✓	**02-May-2023**	18-May-2023	✓

Matrix: **SOIL**

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

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
***Container** / Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) SS122, SS123, SS124, SS125, SS126, SS127, SS128, SS129	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**02-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) SS101, SS121, BH101_0-0.1, BH106_0-0.1, TP101_0-0.1, TP102_0-0.1, TP103_0-0.1, TP104_0-0.1	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112, SS113, SS114, SS115, SS116, SS117, SS118, SS119, SS120	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**04-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) SS130, SS131, SS132, SS133, SS134, SS135, SS136, SS137, SS138, SS139, SS140	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**02-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) SS141, SS142, SS143, BH102_0-0.1, BH103_0-0.1, BH104_0.-0.1, BH104_0.3-0.4, BH105_0-0.1	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) SS144, SS145, SS146, SS147, SS148, BH107_0-0.1, BH108_0-0.1, BH108_0.3-0.4, BH109_0-0.1, BH110_0-0.1, BH111_0-0.1	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**03-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*
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP071) TP101_0-0.1	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**02-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP071) TP102_0-0.1, TP103_0-0.1, TP104_0-0.1	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112, SS113, SS114, SS115, SS116, SS117, SS118, SS119, SS120, SS121, SS122, SS123, SS124, SS125, SS126, SS127, SS128, SS129, BH101_0-0.1, BH106_0-0.1	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**04-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP101_0-0.1, TP102_0-0.1, TP103_0-0.1, TP104_0-0.1	**18-Apr-2023**	**02-May-2023**	02-May-2023	✓	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS121, SS122, SS123, SS124, SS125, SS126, SS127, SS128, SS129, BH101_0-0.1	**18-Apr-2023**	**28-Apr-2023**	02-May-2023	✓	**01-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) BH106_0-0.1	**18-Apr-2023**	**28-Apr-2023**	02-May-2023	✓	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080)							

Matrix: **SOIL**

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

Method ***Container*** */ Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP080/071: Total Petroleum Hydrocarbons - Continued							
SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112, SS113, SS114, SS115, SS116, SS117, SS118, SS119, SS120	**18-Apr-2023**	**28-Apr-2023**	02-May-2023	✓	**29-Apr-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS141, SS142, SS143	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS130, SS131, SS132, SS133, SS134, SS135, SS136, SS137, SS138, SS139, SS140, BH102_0-0.1, BH103_0-0.1, BH104_0.-0.1, BH104_0.3-0.4, BH105_0-0.1	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**04-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS130, SS131, SS132, SS133, SS134, SS135, SS136, SS137, SS138, SS139	**19-Apr-2023**	**28-Apr-2023**	03-May-2023	✓	**01-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS140, SS141, SS142, SS143, BH102_0-0.1, BH103_0-0.1, BH104_0.-0.1, BH104_0.3-0.4, BH105_0-0.1	**19-Apr-2023**	**28-Apr-2023**	03-May-2023	✓	**02-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS145, BH111_0-0.1	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS144, SS146, SS147, SS148, BH107_0-0.1, BH108_0-0.1, BH108_0.3-0.4, BH109_0-0.1, BH110_0-0.1	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**04-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*
EP080/071: Total Petroleum Hydrocarbons - Continued								
Soil Glass Jar - Unpreserved (EP080) BH111_0-0.1		**20-Apr-2023**	**02-May-2023**	04-May-2023	✓	**02-May-2023**	04-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS144, SS146, SS148, BH108_0-0.1, BH109_0-0.1,	SS145, SS147, BH107_0-0.1, BH108_0.3-0.4, BH110_0-0.1	**20-Apr-2023**	**28-Apr-2023**	04-May-2023	✓	**02-May-2023**	04-May-2023	✓

Matrix: **SOIL**

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

Method ***Container*** */ Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP071) TP101_0-0.1	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**02-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP071) TP102_0-0.1, TP103_0-0.1, TP104_0-0.1	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112, SS113, SS114, SS115, SS116, SS117, SS118, SS119, SS120, SS121, SS122, SS123, SS124, SS125, SS126, SS127, SS128, SS129, BH101_0-0.1, BH106_0-0.1	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**04-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP101_0-0.1, TP102_0-0.1, TP103_0-0.1, TP104_0-0.1	**18-Apr-2023**	**02-May-2023**	02-May-2023	✓	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS121, SS122, SS123, SS124, SS125, SS126, SS127, SS128, SS129, BH101_0-0.1	**18-Apr-2023**	**28-Apr-2023**	02-May-2023	✓	**01-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) BH106_0-0.1	**18-Apr-2023**	**28-Apr-2023**	02-May-2023	✓	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080)							

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*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued							
SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112, SS113, SS114, SS115, SS116, SS117, SS118, SS119, SS120	**18-Apr-2023**	**28-Apr-2023**	02-May-2023	✓	**29-Apr-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS141, SS142, SS143	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS130, SS131, SS132, SS133, SS134, SS135, SS136, SS137, SS138, SS139, SS140, BH102_0-0.1, BH103_0-0.1, BH104_0.-0.1, BH104_0.3-0.4, BH105_0-0.1	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**04-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS130, SS131, SS132, SS133, SS134, SS135, SS136, SS137, SS138, SS139	**19-Apr-2023**	**28-Apr-2023**	03-May-2023	✓	**01-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS140, SS141, SS142, SS143, BH102_0-0.1, BH103_0-0.1, BH104_0.-0.1, BH104_0.3-0.4, BH105_0-0.1	**19-Apr-2023**	**28-Apr-2023**	03-May-2023	✓	**02-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS145, BH111_0-0.1	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP071) SS144, SS146, SS147, SS148, BH107_0-0.1, BH108_0-0.1, BH108_0.3-0.4, BH109_0-0.1, BH110_0-0.1	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**04-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
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
Soil Glass Jar - Unpreserved (EP080) BH111_0-0.1		**20-Apr-2023**	**02-May-2023**	04-May-2023	✓	**02-May-2023**	04-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS144, SS146, SS148, BH108_0-0.1, BH109_0-0.1,	SS145, SS147, BH107_0-0.1, BH108_0.3-0.4, BH110_0-0.1	**20-Apr-2023**	**28-Apr-2023**	04-May-2023	✓	**02-May-2023**	04-May-2023	✓

Matrix: **SOIL**

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

Method ***Container*** */ Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation*			*Analysis*		
		Date extracted	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) TP101_0-0.1, TP102_0-0.1, TP103_0-0.1, TP104_0-0.1	**18-Apr-2023**	**02-May-2023**	02-May-2023	✓	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS121, SS122, SS123, SS124, SS125, SS126, SS127, SS128, SS129, BH101_0-0.1	**18-Apr-2023**	**28-Apr-2023**	02-May-2023	✓	**01-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) BH106_0-0.1	**18-Apr-2023**	**28-Apr-2023**	02-May-2023	✓	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS101, SS102, SS103, SS104, SS105, SS106, SS107, SS108, SS109, SS110, SS111, SS112, SS113, SS114, SS115, SS116, SS117, SS118, SS119, SS120	**18-Apr-2023**	**28-Apr-2023**	02-May-2023	✓	**29-Apr-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS130, SS131, SS132, SS133, SS134, SS135, SS136, SS137, SS138, SS139	**19-Apr-2023**	**28-Apr-2023**	03-May-2023	✓	**01-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS140, SS141, SS142, SS143, BH102_0-0.1, BH103_0-0.1, BH104_0.-0.1, BH104_0.3-0.4, BH105_0-0.1	**19-Apr-2023**	**28-Apr-2023**	03-May-2023	✓	**02-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) BH111_0-0.1	**20-Apr-2023**	**02-May-2023**	04-May-2023	✓	**02-May-2023**	04-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) SS144, SS145, SS146, SS147, SS148, BH107_0-0.1, BH108_0-0.1, BH108_0.3-0.4, BH109_0-0.1, BH110_0-0.1	**20-Apr-2023**	**28-Apr-2023**	04-May-2023	✓	**02-May-2023**	04-May-2023	✓

Matrix: **SOLID**

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

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
***Container** / Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) BH104_0.3-0.4	**19-Apr-2023**	**----**	----	----	**28-Apr-2023**	16-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	13	119	**10.92**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	10	97	**10.31**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	10	103	**9.71**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	11	110	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	10	97	**10.31**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	8	77	**10.39**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	5	97	**5.15**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	103	**5.83**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	110	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	5	97	**5.15**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	77	**5.19**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	5	97	**5.15**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	103	**5.83**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	110	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	5	97	**5.15**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	77	**5.19**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	5	97	**5.15**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	6	103	**5.83**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	6	110	**5.45**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	5	97	**5.15**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	77	**5.19**	**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).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2313346**

Client	: **CAVVANBA CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: MR DREW WOOD	Contact	: Karen Coveny
Address	: PO Box 322 NEWCASTLE 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: drew@cavvanba.com	E-mail	: karen.coveny@alsglobal.com
Telephone	: +61 02 6685 7811	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 6685 5083	Facsimile	: +61-2-8784 8500
Project	: 20025.76	Page	: 1 of 4
Order number	: 20025.76	Quote number	: EB2017CAVCON0001 (SYBQ/409/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: ZAC LAUGHLAN		

Dates

Date Samples Received	: 21-Apr-2023 19:40	Issue Date	: 26-Apr-2023
Client Requested Due Date	: 04-May-2023	Scheduled Reporting Date	: **04-May-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 5	Temperature	: 6.6'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 78 / 66

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This workorder has been split into ES2313408.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **SOIL**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2313346-001	18-Apr-2023 00:00	SS101		✓	✓
ES2313346-002	18-Apr-2023 00:00	SS102		✓	✓
ES2313346-003	18-Apr-2023 00:00	SS103		✓	✓
ES2313346-004	18-Apr-2023 00:00	SS104		✓	✓
ES2313346-005	18-Apr-2023 00:00	SS105		✓	✓
ES2313346-006	18-Apr-2023 00:00	SS106		✓	✓
ES2313346-007	18-Apr-2023 00:00	SS107		✓	✓
ES2313346-008	18-Apr-2023 00:00	SS108		✓	✓
ES2313346-009	18-Apr-2023 00:00	SS109		✓	✓
ES2313346-010	18-Apr-2023 00:00	SS110		✓	✓
ES2313346-011	18-Apr-2023 00:00	SS111		✓	✓
ES2313346-012	18-Apr-2023 00:00	SS112		✓	✓
ES2313346-013	18-Apr-2023 00:00	SS113		✓	✓
ES2313346-014	18-Apr-2023 00:00	SS114		✓	✓
ES2313346-015	18-Apr-2023 00:00	SS115		✓	✓
ES2313346-016	18-Apr-2023 00:00	SS116		✓	✓
ES2313346-017	18-Apr-2023 00:00	SS117		✓	✓
ES2313346-018	18-Apr-2023 00:00	SS118		✓	✓
ES2313346-019	18-Apr-2023 00:00	SS119		✓	✓
ES2313346-020	18-Apr-2023 00:00	SS120		✓	✓
ES2313346-021	18-Apr-2023 00:00	SS121		✓	✓
ES2313346-022	18-Apr-2023 00:00	SS122		✓	✓
ES2313346-023	18-Apr-2023 00:00	SS123		✓	✓
ES2313346-024	18-Apr-2023 00:00	SS124		✓	✓
ES2313346-025	18-Apr-2023 00:00	SS125		✓	✓
ES2313346-026	18-Apr-2023 00:00	SS126		✓	✓
ES2313346-027	18-Apr-2023 00:00	SS127		✓	✓
ES2313346-028	18-Apr-2023 00:00	SS128		✓	✓
ES2313346-029	18-Apr-2023 00:00	SS129		✓	✓
ES2313346-030	19-Apr-2023 00:00	SS130		✓	✓
ES2313346-031	19-Apr-2023 00:00	SS131		✓	✓
ES2313346-032	19-Apr-2023 00:00	SS132		✓	✓
ES2313346-033	19-Apr-2023 00:00	SS133		✓	✓
ES2313346-034	19-Apr-2023 00:00	SS134		✓	✓
ES2313346-035	19-Apr-2023 00:00	SS135		✓	✓

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2313346-036	19-Apr-2023 00:00	SS136		✓	✓
ES2313346-037	19-Apr-2023 00:00	SS137		✓	✓
ES2313346-038	19-Apr-2023 00:00	SS138		✓	✓
ES2313346-039	19-Apr-2023 00:00	SS139		✓	✓
ES2313346-040	19-Apr-2023 00:00	SS140		✓	✓
ES2313346-041	19-Apr-2023 00:00	SS141		✓	✓
ES2313346-042	19-Apr-2023 00:00	SS142		✓	✓
ES2313346-043	19-Apr-2023 00:00	SS143		✓	✓
ES2313346-044	20-Apr-2023 00:00	SS144		✓	✓
ES2313346-045	20-Apr-2023 00:00	SS145		✓	✓
ES2313346-046	20-Apr-2023 00:00	SS146		✓	✓
ES2313346-047	20-Apr-2023 00:00	SS147		✓	✓
ES2313346-048	20-Apr-2023 00:00	SS148		✓	✓
ES2313346-049	18-Apr-2023 00:00	BH101_0-0.1		✓	✓
ES2313346-050	18-Apr-2023 00:00	BH101_0.3-0.4	✓		
ES2313346-051	19-Apr-2023 00:00	BH102_0-0.1		✓	✓
ES2313346-052	19-Apr-2023 00:00	BH102_0.2-0.3	✓		
ES2313346-053	19-Apr-2023 00:00	BH103_0-0.1		✓	✓
ES2313346-054	19-Apr-2023 00:00	BH103_0.2-0.3	✓		
ES2313346-055	19-Apr-2023 00:00	BH104_0.-0.1		✓	✓
ES2313346-056	19-Apr-2023 00:00	BH104_0.3-0.4		✓	✓
ES2313346-057	19-Apr-2023 00:00	BH105_0-0.1		✓	✓
ES2313346-058	19-Apr-2023 00:00	BH105_0.3-0.4	✓		
ES2313346-059	18-Apr-2023 00:00	BH106_0-0.1		✓	✓
ES2313346-060	20-Apr-2023 00:00	BH106_0.3-0.4	✓		
ES2313346-061	20-Apr-2023 00:00	BH107_0-0.1		✓	✓
ES2313346-062	20-Apr-2023 00:00	BH107_0.3-0.4	✓		
ES2313346-063	20-Apr-2023 00:00	BH108_0-0.1		✓	✓
ES2313346-064	20-Apr-2023 00:00	BH108_0.3-0.4		✓	✓
ES2313346-065	20-Apr-2023 00:00	BH109_0-0.1		✓	✓
ES2313346-066	20-Apr-2023 00:00	BH109_0.3-0.4	✓		
ES2313346-067	20-Apr-2023 00:00	BH110_0-0.1		✓	✓
ES2313346-068	20-Apr-2023 00:00	BH110_0.3-0.4	✓		
ES2313346-069	20-Apr-2023 00:00	BH111_0-0.1		✓	✓
ES2313346-070	20-Apr-2023 00:00	BH111_0.3-0.4	✓		
ES2313346-071	18-Apr-2023 00:00	TP101_0-0.1		✓	✓
ES2313346-072	18-Apr-2023 00:00	TP101_0.3-0.4	✓		
ES2313346-073	18-Apr-2023 00:00	TP102_0-0.1		✓	✓
ES2313346-074	18-Apr-2023 00:00	TP102_0.3-0.4	✓		
ES2313346-075	18-Apr-2023 00:00	TP103_0-0.1		✓	✓
ES2313346-076	18-Apr-2023 00:00	TP103_0.3-0.4	✓		

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2313346-077	18-Apr-2023 00:00	TP104_0-0.1		✓	✓

Matrix: **SOLID**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOLID - EA200B Asbestos Identification in Bulk Solids (Excluding
ES2313346-078	19-Apr-2023 00:00	BH104_0.3-0.4	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	inbox@cavvanba.com
DREW WOOD		
- *AU Certificate of Analysis - NATA (COA)	Email	drew@cavvanba.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	drew@cavvanba.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	drew@cavvanba.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	drew@cavvanba.com
- A4 - AU Tax Invoice (INV)	Email	drew@cavvanba.com
- Chain of Custody (CoC) (COC)	Email	drew@cavvanba.com
- EDI Format - ENMRG (ENMRG)	Email	drew@cavvanba.com
ROB MCLELLAND		
- A4 - AU Tax Invoice (INV)	Email	rob@cavvanba.com
ZAC LAUGHLAN		
- *AU Certificate of Analysis - NATA (COA)	Email	zac@cavvanba.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	zac@cavvanba.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	zac@cavvanba.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	zac@cavvanba.com
- Chain of Custody (CoC) (COC)	Email	zac@cavvanba.com
- EDI Format - ENMRG (ENMRG)	Email	zac@cavvanba.com

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

☐MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Cawonba Consulting
OFFICE: Newcastle.
PROJECT: 20025.76
ORDER NUMBER: 20025.76
PROJECT MANAGER: Drew wood **CONTACT PH:**
SAMPLER: Zac Laughlan **SAMPLER MOBILE:** 042 888 854
COC emailed to ALS? (YES / NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): drew, zac
Email Invoice to (will default to PM if no other addresses are listed): rob

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☑ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.:

COC SEQUENCE NUMBER (Circle)
COC: [✓ 1] 2 3 4 5 6 7
OF: [✓ 1] 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No [✓ N/A]
Free ice / frozen ice bricks present upon receipt? [✓ Yes] No N/A
Random Sample Temperature on Receipt: 6.6 °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	JN 21.4.3		SOJS 4/4p ts.
DATE/TIME: 21.4.23	DATE/TIME: 1650	DATE/TIME: 21/4/23 5pm	DATE/TIME: 21/4/23 1940

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS									Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
				TOTAL										

COCs to follow

E-MAILED

LAB OF ORIGIN:
NEWCASTLE

Environmental Division
Sydney
Work Order Reference
ES2313346

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Cavvanba Consulting
OFFICE: Newcastle
PROJECT: 20025.76
ORDER NUMBER: 20025.76
PROJECT MANAGER: Drew Wood CONTACT PH: 0403 689 755
SAMPLER: Zac Laughlan SAMPLER MOBILE: 0428 288 854
COC emailed to ALS? (YES / NO) EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):
ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7 8 9 10 11
OF: 1 2 3 4 5 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:
DATE/TIME:
24/04/2023

RECEIVED BY:
DATE/TIME:
24/4/23 9:50

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required)									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	SS101	18/04/2023	Soil		1	X									
2	SS102	18/04/2023	Soil		1	X									
3	SS103	18/04/2023	Soil		1	X									
4	SS104	18/04/2023	Soil		1	X									
5	SS105	18/04/2023	Soil		1	X									
6	SS106	18/04/2023	Soil		1	X									
7	SS107	18/04/2023	Soil		1	X									
8	SS108	18/04/2023	Soil		1	X									
9	SS109	18/04/2023	Soil		1	X									
10	SS110	18/04/2023	Soil		1	X									
11	SS111	18/04/2023	Soil		1	X									
12	SS112	18/04/2023	Soil		1	X									
13	SS113	18/04/2023	Soil		1	X									
14	SS114	18/04/2023	Soil		1	X									
15	SS115	18/04/2023	Soil		1	X									
16	SS116	18/04/2023	Soil		1	X									
17	SS117	18/04/2023	Soil		1	X									
18	SS118	18/04/2023	Soil		1	X									
19	SS119	18/04/2023	Soil		1	X									
20	SS120	18/04/2023	Soil		1	X									
TOTAL															

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

Environmental Division
Sydney
Work Order Reference
ES2313346

Telephone : + 61-2-8784 8555

Subcon / Forward Lab / Split WO: ES2313408
Lab / Analysis:
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
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☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Cavvanba Consulting
OFFICE: Newcastle
PROJECT: 20025.76
ORDER NUMBER: 20025.76
PROJECT MANAGER: Drew Wood
CONTACT PH: 0403 689 755
SAMPLER: Zac Laughlan
SAMPLER MOBILE: 0428 288 854
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):

ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 [✓ 5] 6 7 8 9 10 11
OF: 1 2 3 [✓ 4] 5 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:
DATE/TIME: 24/04/2023

RECEIVED BY:
DATE/TIME: 24/4/23 9:50

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
21	SS121	18/04/2023	Soil		1	X									
22	SS122	18/04/2023	Soil		1	X									
23	SS123	18/04/2023	Soil		1	X									
24	SS124	18/04/2023	Soil		1	X									
25	SS125	18/04/2023	Soil		1	X									
26	SS126	18/04/2023	Soil		1	X									
27	SS127	18/04/2023	Soil		1	X									
28	SS128	18/04/2023	Soil		1	X									
29	SS129	18/04/2023	Soil		1	X									
30	SS130	19/04/2023	Soil		1	X									
31	SS131	19/04/2023	Soil		1	X									
32	SS132	19/04/2023	Soil		1	X									
33	SS133	19/04/2023	Soil		1	X									
34	SS134	19/04/2023	Soil		1	X									
35	SS135	19/04/2023	Soil		1	X									
36	SS136	19/04/2023	Soil		1	X									
37	SS137	19/04/2023	Soil		1	X									
38	SS138	19/04/2023	Soil		1	X									
39	SS139	19/04/2023	Soil		1	X									
40	SS140	19/04/2023	Soil		1	X									
				TOTAL											

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Cavvanba Consulting
OFFICE: Newcastle
PROJECT: 20025.76
ORDER NUMBER: 20025.76
PROJECT MANAGER: Drew Wood CONTACT PH: 0403 689 755
SAMPLER: Zac Laughlan SAMPLER MOBILE: 0428 288 854
COC emailed to ALS? (YES / NO) EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7 8 9 10 11
OF: 1 2 3 [✓ 4] 5 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:
DATE/TIME
24/04/2023

RECEIVED BY:
DATE/TIME:
24/4/23 9.30

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)										Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
41	SS141	19/04/2023	Soil		1	X										
42	SS142	19/04/2023	Soil		1	X										
43	SS143	19/04/2023	Soil		1	X										
44	SS144	20/04/2023	Soil		1	X										
45	SS145	20/04/2023	Soil		1	X										
46	SS146	20/04/2023	Soil		1	X										
47	SS147	20/04/2023	Soil		1	X										
48	SS148	20/04/2023	Soil		1	X										
49	BH101_0-0.1	18/04/2023	Soil		1	X										
50	BH101_0.3-0.4	18/04/2023	Soil		1											
51	BH102_0-0.1	19/04/2023	Soil		1	X										
52	BH102_0.2-0.3	19/04/2023	Soil		1											
53	BH103_0-0.1	19/04/2023	Soil		1	X										
54	BH103_0.2-0.3	19/04/2023	Soil		1											
55	BH104_0-0.1	19/04/2023	Soil		1	X										
56	BH104_0.3-0.4	19/04/2023	Soil		1	X	X									
57	BH105_0-0.1	19/04/2023	Soil		1	X										
58	BH105_0.3-0.4	19/04/2023	Soil		1											
59	BH106_0-0.1	20/04/2023	Soil		1	X										
60	BH106_0.3-0.4	20/04/2023	Soil		1											
				TOTAL												

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Cavvanba Consulting
OFFICE: Newcastle
PROJECT: 20025.76
ORDER NUMBER: 20025.76
PROJECT MANAGER: Drew Wood
CONTACT PH: 0403 689 755
SAMPLER: Zac Laughlan
SAMPLER MOBILE: 0428 288 854
COC emailed to ALS? (YES / NO)
EDD FORMAT (or default):
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TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☒ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**
ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7 8 9 10 11
OF: 1 2 3 4 5 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 24/04/2023	DATE/TIME: 24/4/23 9:50	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)												Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN										Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
61	BH107_0-0.1	20/04/2023	Soil		1	X												
62	BH107_0.3-0.4	20/04/2023	Soil		1													
63	BH108_0-0.1	20/04/2023	Soil		1	X												
64	BH108_0.3-0.4	20/04/2023	Soil		1	X												
65	BH109_0-0.1	20/04/2023	Soil		1	X												
66	BH109_0.3-0.4	20/04/2023	Soil		1													
67	BH110_0-0.1	20/04/2023	Soil		1	X												
68	BH110_0.3-0.4	20/04/2023	Soil		1													
69	BH111_0-0.1	20/04/2023	Soil		1	X												
70	BH111_0.3-0.4	20/04/2023	Soil		1													
71	TP101_0-0.1	18/04/2023	Soil		1	X												
72	TP101_0.3-0.4	18/04/2023	Soil		1													
73	TP102_0-0.1	18/04/2023	Soil		1	X												
74	TP102_0.3-0.4	18/04/2023	Soil		1													
75	TP103_0-0.1	18/04/2023	Soil		1	X												
76	TP103_0.3-0.4	18/04/2023	Soil		1													
77	TP104_0-0.1	18/04/2023	Soil		1	X												
				TOTAL														

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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PROJECT: 20025.76
ORDER NUMBER: 20025.76
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SAMPLER: Zac Laughlan
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☒ Standard TAT (**List due date**):
☐ Non Standard or urgent TAT (**List due date**):
ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7 8 9 10 11
OF: 1 2 3 4 5 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
	力ア		
DATE/TIME: 24/04/2023	DATE/TIME: 24/4/23 9:50	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)												Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN										Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	SS101	18/04/2023	Soil		1	X												
2	SS102	18/04/2023	Soil		1	X												
3	SS103	18/04/2023	Soil		1	X												
4	SS104	18/04/2023	Soil		1	X												
5	SS105	18/04/2023	Soil		1	X												
6	SS106	18/04/2023	Soil		1	X												
7	SS107	18/04/2023	Soil		1	X												
8	SS108	18/04/2023	Soil		1	X												
9	SS109	18/04/2023	Soil		1	X												
10	SS110	18/04/2023	Soil		1	X												
11	SS111	18/04/2023	Soil		1	X												
12	SS112	18/04/2023	Soil		1	X												
13	SS113	18/04/2023	Soil		1	X												
14	SS114	18/04/2023	Soil		1	X												
15	SS115	18/04/2023	Soil		1	X												
16	SS116	18/04/2023	Soil		1	X												
17	SS117	18/04/2023	Soil		1	X												
18	SS118	18/04/2023	Soil		1	X												
19	SS119	18/04/2023	Soil		1	X												
20	SS120	18/04/2023	Soil		1	X												
				TOTAL														

Environmental Division
Sydney
Work Order Reference
ES2313346
Telephone : + 61-2-8784 8555

[✓ Subcon] / Forward Lab / Split WO ES2313408
Lab / Analysis: Newcastle → Asbestos
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CERTIFICATE OF ANALYSIS

Work Order : **ES2313408**
Client : **CAVVANBA CONSULTING**
Contact : MR DREW WOOD
Address : PO Box 322
NEWCASTLE 2300
Telephone : +61 02 6685 7811
Project : 20025.76
Order number : 20025.76
C-O-C number : ----
Sampler : ZAC LAUGHLAN
Site : ----
Quote number : SYBQ/409/21
No. of samples received : 71
No. of samples analysed : 36

Page : 1 of 23
Laboratory : Environmental Division Sydney
Contact : Karen Coveny
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 21-Apr-2023 19:40
Date Analysis Commenced : 28-Apr-2023
Issue Date : 04-May-2023 16:32

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP071: Results of samples QS101, QS103, QS105 and QS107 have been confirmed by re-extraction and re-analysis.
- EG005T: Poor precision was obtained for Nickel on sample ES2313408 # 055. Confirmed by re-digestion and reanalysis.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- 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: Analysis of asbestos from swabs and tapes is not covered under the current scope of NATA accreditation.
- EP075(SIM): Surrogate recovery bias low due to sample matrix interferences.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEXN only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained.
- EA200: N/A - Not Applicable

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**TP105_0-0.1**	**TP105_0.3-0.4**	**TP106_0-0.1**	**TP107_0-0.1**	**TP107_0.3-0.4**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-003**	**ES2313408-004**	**ES2313408-005**	**ES2313408-007**	**ES2313408-008**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**17.1**	**25.4**	**17.6**	**24.4**	**14.8**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**19**	**13**	**19**	**20**	**8**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**13**	**8**	**32**	**14**	**66**
Copper	7440-50-8	5	mg/kg	**125**	**238**	**224**	**221**	**43**
Lead	7439-92-1	5	mg/kg	**290**	**356**	**297**	**249**	**64**
Nickel	7440-02-0	2	mg/kg	**14**	**9**	**23**	**30**	**17**
Zinc	7440-66-6	5	mg/kg	**208**	**58**	**314**	**190**	**142**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**1.0**	<0.5	**1.1**	**1.1**	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	**0.5**	<0.5	<0.5	**0.6**	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	**0.5**	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	**1.5**	<0.5	**1.1**	**2.2**	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**TP105_0-0.1**	**TP105_0.3-0.4**	**TP106_0-0.1**	**TP107_0-0.1**	**TP107_0.3-0.4**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-003**	**ES2313408-004**	**ES2313408-005**	**ES2313408-007**	**ES2313408-008**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**330**	**150**	**300**	**290**	<100
C29 - C36 Fraction	----	100	mg/kg	**220**	<100	**200**	**180**	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**550**	**150**	**500**	**470**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**460**	**180**	**420**	**400**	**100**
>C34 - C40 Fraction	----	100	mg/kg	**170**	<100	**160**	**130**	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**630**	**180**	**580**	**530**	**100**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**83.1**	**75.1**	**51.0**	**75.2**	**71.2**
2-Chlorophenol-D4	93951-73-6	0.5	%	**87.6**	**80.1**	**64.4**	**81.0**	**76.1**
2.4.6-Tribromophenol	118-79-6	0.5	%	**63.8**	**54.8**	**46.4**	**63.4**	**40.8**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**79.3**	**78.5**	**79.7**	**76.2**	**87.0**
Anthracene-d10	1719-06-8	0.5	%	**73.5**	**74.4**	**77.2**	**72.0**	**85.4**
4-Terphenyl-d14	1718-51-0	0.5	%	**74.2**	**75.0**	**76.4**	**71.9**	**83.4**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**104**	**87.6**	**94.3**	**94.6**	**98.5**
Toluene-D8	2037-26-5	0.2	%	**86.2**	**85.9**	**97.4**	**96.7**	**87.8**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**TP105_0-0.1**	**TP105_0.3-0.4**	**TP106_0-0.1**	**TP107_0-0.1**	**TP107_0.3-0.4**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-003**	**ES2313408-004**	**ES2313408-005**	**ES2313408-007**	**ES2313408-008**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**101**	**91.3**	**102**	**97.0**	**106**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Sample ID	**TP108_0-0.1**	**TP109_0-0.1**	**TP110_0-0.1**	**TP110_0.3-0.4**	**TP111_0-0.1**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-009**	**ES2313408-011**	**ES2313408-013**	**ES2313408-014**	**ES2313408-015**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**18.5**	**11.6**	**11.8**	**12.6**	**18.3**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**20**	**15**	**10**	**27**	**17**
Cadmium	7440-43-9	1	mg/kg	**1**	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**43**	**13**	**12**	**6**	**29**
Copper	7440-50-8	5	mg/kg	**229**	**188**	**133**	**194**	**189**
Lead	7439-92-1	5	mg/kg	**392**	**331**	**86**	**47**	**217**
Nickel	7440-02-0	2	mg/kg	**37**	**14**	**10**	**15**	**23**
Zinc	7440-66-6	5	mg/kg	**298**	**416**	**151**	**70**	**349**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**1.2**	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	**1.2**	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	**1.0**	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	**0.5**	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	**0.6**	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	**4.5**	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TP108_0-0.1	TP109_0-0.1	TP110_0-0.1	TP110_0.3-0.4	TP111_0-0.1
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ES2313408-009	ES2313408-011	ES2313408-013	ES2313408-014	ES2313408-015
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**390**	**130**	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	**310**	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**700**	**130**	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**580**	**190**	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	**230**	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**810**	**190**	<50	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**80.0**	**80.2**	**83.2**	**55.2**	**85.6**
2-Chlorophenol-D4	93951-73-6	0.5	%	**83.9**	**83.7**	**83.3**	**61.5**	**90.3**
2.4.6-Tribromophenol	118-79-6	0.5	%	**62.5**	**58.8**	**51.8**	**40.0**	**61.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**78.7**	**78.6**	**78.9**	**83.2**	**80.0**
Anthracene-d10	1719-06-8	0.5	%	**69.8**	**69.8**	**66.2**	**69.5**	**77.4**
4-Terphenyl-d14	1718-51-0	0.5	%	**70.9**	**72.9**	**72.4**	**78.8**	**78.7**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**89.2**	**91.4**	**89.9**	**110**	**95.4**
Toluene-D8	2037-26-5	0.2	%	**89.5**	**101**	**89.5**	**92.4**	**86.6**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

			Sample ID	**TP108_0-0.1**	**TP109_0-0.1**	**TP110_0-0.1**	**TP110_0.3-0.4**	**TP111_0-0.1**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313408-009**	**ES2313408-011**	**ES2313408-013**	**ES2313408-014**	**ES2313408-015**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**93.6**	**100**	**96.4**	**107**	**91.2**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**TP112_0-0.1**	**TP113_0-0.1**	**TP113_0.4-0.5**	**TP114_0-0.1**	**TP115_0-0.1**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-017**	**ES2313408-019**	**ES2313408-020**	**ES2313408-021**	**ES2313408-023**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**19.4**	**21.3**	**11.4**	**15.0**	**18.0**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**8**	**9**	**10**	**112**	**12**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**38**	**15**	**14**	**9**	**20**
Copper	7440-50-8	5	mg/kg	**630**	**310**	**409**	**68**	**213**
Lead	7439-92-1	5	mg/kg	**530**	**823**	**1200**	**209**	**396**
Nickel	7440-02-0	2	mg/kg	**24**	**12**	**15**	**5**	**18**
Zinc	7440-66-6	5	mg/kg	**394**	**184**	**298**	**262**	**423**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.1**	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	**0.7**
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	**0.8**
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	**0.8**	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	**0.8**	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	**0.6**	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	**0.7**	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	<0.5	**2.9**	<0.5	**1.5**
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**TP112_0-0.1**	**TP113_0-0.1**	**TP113_0.4-0.5**	**TP114_0-0.1**	**TP115_0-0.1**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313408-017**	**ES2313408-019**	**ES2313408-020**	**ES2313408-021**	**ES2313408-023**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**130**	<100	**120**	**480**	**430**
C29 - C36 Fraction	----	100	mg/kg	<100	<100	**150**	**810**	**180**
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**130**	<50	**270**	**1290**	**610**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	**60**
>C16 - C34 Fraction	----	100	mg/kg	**190**	**120**	**220**	**1020**	**520**
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	**590**	**160**
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**190**	**120**	**220**	**1610**	**740**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	**60**
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**85.9**	**83.8**	**81.9**	**84.6**	**84.7**
2-Chlorophenol-D4	93951-73-6	0.5	%	**86.5**	**85.3**	**83.4**	**88.1**	**87.8**
2.4.6-Tribromophenol	118-79-6	0.5	%	**55.5**	**54.7**	**52.9**	**69.7**	**66.2**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**79.8**	**78.0**	**79.4**	**77.8**	**79.4**
Anthracene-d10	1719-06-8	0.5	%	**74.4**	**72.0**	**69.7**	**73.6**	**71.6**
4-Terphenyl-d14	1718-51-0	0.5	%	**75.5**	**72.9**	**71.9**	**72.5**	**73.1**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**99.8**	**86.4**	**80.9**	**87.4**	**89.9**
Toluene-D8	2037-26-5	0.2	%	**84.5**	**88.0**	**85.0**	**89.0**	**89.4**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL)**			Sample ID	**TP112_0-0.1**	**TP113_0-0.1**	**TP113_0.4-0.5**	**TP114_0-0.1**	**TP115_0-0.1**
			Sampling date / time	19-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313408-017**	**ES2313408-019**	**ES2313408-020**	**ES2313408-021**	**ES2313408-023**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**97.2**	**100.0**	**89.8**	**96.2**	**91.7**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TP115_0.3-0.4	TP116_0-0.1	TP117_0-0.1	TP118_0-0.1	MW103_0.2-0.3
			Sampling date / time	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	19-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ES2313408-024	ES2313408-025	ES2313408-027	ES2313408-029	ES2313408-046
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**18.0**	**20.6**	**15.6**	**9.6**	**5.9**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	**11**	<5	<5	**10**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	<2	**25**	**30**	**16**	**45**
Copper	7440-50-8	5	mg/kg	**6**	**168**	**132**	**428**	**109**
Lead	7439-92-1	5	mg/kg	**38**	**108**	**132**	**257**	**111**
Nickel	7440-02-0	2	mg/kg	**3**	**19**	**14**	**13**	**24**
Zinc	7440-66-6	5	mg/kg	**31**	**141**	**363**	**1290**	**819**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	**0.7**	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**0.9**	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	**1.6**	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			Sample ID	**TP115_0.3-0.4**	**TP116_0-0.1**	**TP117_0-0.1**	**TP118_0-0.1**	**MW103_0.2-0.3**
			Sampling date / time	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	19-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313408-024**	**ES2313408-025**	**ES2313408-027**	**ES2313408-029**	**ES2313408-046**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	**60**	<50	<50	<50	**90**
C15 - C28 Fraction	----	100	mg/kg	**750**	**140**	<100	<100	**620**
C29 - C36 Fraction	----	100	mg/kg	**280**	<100	<100	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**1090**	**140**	<50	<50	**710**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	**110**	<50	<50	<50	**250**
>C16 - C34 Fraction	----	100	mg/kg	**900**	**170**	**110**	<100	**470**
>C34 - C40 Fraction	----	100	mg/kg	**190**	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**1200**	**170**	**110**	<50	**720**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	**110**	<50	<50	<50	**250**
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**80.1**	**84.1**	**83.0**	**87.5**	**89.2**
2-Chlorophenol-D4	93951-73-6	0.5	%	**82.2**	**94.4**	**88.8**	**95.9**	**97.8**
2.4.6-Tribromophenol	118-79-6	0.5	%	**59.3**	**103**	**70.4**	**84.0**	**91.7**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**75.3**	**103**	**101**	**103**	**103**
Anthracene-d10	1719-06-8	0.5	%	**66.9**	**103**	**90.2**	**112**	**102**
4-Terphenyl-d14	1718-51-0	0.5	%	**68.3**	**92.6**	**85.2**	**95.3**	**95.3**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**107**	**95.9**	**94.4**	**91.4**	**100**
Toluene-D8	2037-26-5	0.2	%	**91.6**	**88.0**	**81.2**	**93.4**	**93.7**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL)**			*Sample ID*	**TP115_0.3-0.4**	**TP116_0-0.1**	**TP117_0-0.1**	**TP118_0-0.1**	**MW103_0.2-0.3**
			Sampling date / time	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00	19-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-024**	**ES2313408-025**	**ES2313408-027**	**ES2313408-029**	**ES2313408-046**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**99.2**	**93.7**	**87.3**	**92.2**	**98.4**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)	*Sample ID*			**QS101**	**QS103**	**QS105**	**QS107**	**QS109**
	Sampling date / time			18-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-055**	**ES2313408-056**	**ES2313408-057**	**ES2313408-058**	**ES2313408-059**
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**19.6**	**11.9**	**16.3**	**5.5**	**17.8**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**139**	**142**	**10**	**6**	<5
Cadmium	7440-43-9	1	mg/kg	**4**	**4**	**1**	<1	<1
Chromium	7440-47-3	2	mg/kg	**40**	**93**	**10**	**21**	**27**
Copper	7440-50-8	5	mg/kg	**414**	**947**	**484**	**172**	**150**
Lead	7439-92-1	5	mg/kg	**1220**	**370**	**918**	**155**	**145**
Nickel	7440-02-0	2	mg/kg	**35**	**38**	**13**	**16**	**15**
Zinc	7440-66-6	5	mg/kg	**949**	**1200**	**508**	**620**	**481**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	**0.2**	<0.1	**0.1**	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	**0.8**	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	**0.6**	<0.5	<0.5	**0.9**	<0.5
Pyrene	129-00-0	0.5	mg/kg	**0.6**	<0.5	<0.5	**0.9**	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	**2.0**	<0.5	<0.5	**1.8**	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**QS101**	**QS103**	**QS105**	**QS107**	**QS109**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-055**	**ES2313408-056**	**ES2313408-057**	**ES2313408-058**	**ES2313408-059**
				Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	**180**	**400**	<100	**120**	<100
C29 - C36 Fraction	----	100	mg/kg	**240**	**620**	<100	**150**	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	**420**	**1020**	<50	**270**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	**320**	**820**	**120**	**230**	<100
>C34 - C40 Fraction	----	100	mg/kg	**170**	**420**	<100	**110**	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	**490**	**1240**	**120**	**340**	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**85.3**	**82.6**	**82.1**	**84.3**	**81.6**
2-Chlorophenol-D4	93951-73-6	0.5	%	**84.6**	**91.7**	**87.2**	**90.8**	**88.6**
2.4.6-Tribromophenol	118-79-6	0.5	%	**104**	**98.7**	**81.4**	**63.5**	**98.6**
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**105**	**101**	**104**	**103**	**96.8**
Anthracene-d10	1719-06-8	0.5	%	**106**	**99.3**	**95.7**	**102**	**102**
4-Terphenyl-d14	1718-51-0	0.5	%	**92.1**	**87.0**	**89.5**	**89.4**	**88.3**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**91.2**	**86.9**	**88.2**	**93.8**	**90.9**
Toluene-D8	2037-26-5	0.2	%	**91.2**	**95.1**	**93.1**	**99.6**	**96.8**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**QS101**	**QS103**	**QS105**	**QS107**	**QS109**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00	20-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-055**	**ES2313408-056**	**ES2313408-057**	**ES2313408-058**	**ES2313408-059**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**86.4**	**88.6**	**85.7**	**93.4**	**90.1**

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL)**			*Sample ID*	**QS111**	**Trip Blank**	**Trip Spike**	**Trip Spike Control**	**----**
			Sampling date / time	20-Apr-2023 00:00	17-Apr-2023 00:00	11-Apr-2023 00:00	11-Apr-2023 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-060**	**ES2313408-066**	**ES2313408-067**	**ES2313408-068**	**--------**
				Result	Result	Result	Result	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**15.4**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**5**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**46**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**202**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**221**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**9**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**114**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg	<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg	<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg	**0.6**	----	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg	**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	----	----	----

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**QS111**	**Trip Blank**	**Trip Spike**	**Trip Spike Control**	**----**
			Sampling date / time	20-Apr-2023 00:00	17-Apr-2023 00:00	11-Apr-2023 00:00	11-Apr-2023 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-060**	**ES2313408-066**	**ES2313408-067**	**ES2313408-068**	**--------**
				Result	Result	Result	Result	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg	<10	<10	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg	<50	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg	<50	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	**3.4**	**3.5**	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	**6.1**	**6.2**	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	**6.3**	**6.8**	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	**3.0**	**3.2**	----
^ **Sum of BTEX**	----	0.2	mg/kg	<0.2	<0.2	**18.8**	**19.7**	----
^ **Total Xylenes**	----	0.5	mg/kg	<0.5	<0.5	**9.3**	**10.0**	----
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	**85.7**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	**92.7**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	**99.2**	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	**98.6**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	**106**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	**89.5**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	**91.2**	**87.0**	**89.2**	**103**	----
Toluene-D8	2037-26-5	0.2	%	**96.4**	**94.7**	**86.0**	**97.8**	----

Analytical Results

Sub-Matrix: **SOIL** (Matrix: **SOIL**)			*Sample ID*	**QS111**	**Trip Blank**	**Trip Spike**	**Trip Spike Control**	**----**
			Sampling date / time	20-Apr-2023 00:00	17-Apr-2023 00:00	11-Apr-2023 00:00	11-Apr-2023 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-060**	**ES2313408-066**	**ES2313408-067**	**ES2313408-068**	**--------**
				Result	Result	Result	Result	----
EP080S: TPH(V)/BTEX Surrogates - Continued								
4-Bromofluorobenzene	460-00-4	0.2	%	**89.2**	**93.8**	**94.0**	**91.9**	**----**

Analytical Results

Sub-Matrix: **SOLID** (Matrix: **SOLID**)			Sample ID	**ACM101**	**ACM102**	**ACM103**	**ACM104**	**ACM105**
			Sampling date / time	18-Apr-2023 00:00	18-Apr-2023 00:00	19-Apr-2023 00:00	19-Apr-2023 00:00	20-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313408-061**	**ES2313408-062**	**ES2313408-063**	**ES2313408-064**	**ES2313408-065**
				Result	Result	Result	Result	Result
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Asbestos Type	1332-21-4	-	--	**Ch + Am**	**Ch**	**Ch**	**Ch**	**Ch + Am**
Asbestos (Trace)	1332-21-4	5	Fibres	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Sample weight (dry)	----	0.01	g	**5.55**	**22.2**	**8.45**	**19.4**	**6.60**
Synthetic Mineral Fibre	----	-	-	**No**	**No**	**No**	**No**	**No**
Organic Fibre	----	-	-	**No**	**No**	**No**	**No**	**No**
APPROVED IDENTIFIER:	----	-	--	**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**

Analytical Results

Sub-Matrix: **SOLID** (Matrix: **SOLID**)			Sample ID	**TP109_0-0.1**	**TP113_0.4-0.5**	----	----	----
			Sampling date / time	18-Apr-2023 00:00	19-Apr-2023 00:00	----	----	----
Compound	CAS Number	LOR	Unit	**ES2313408-069**	**ES2313408-070**	--------	--------	--------
				Result	Result	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	**Yes**	**Yes**	----	----	----
Asbestos Type	1332-21-4	-	--	**Ch**	**Ch + Am**	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres	**N/A**	**N/A**	----	----	----
Sample weight (dry)	----	0.01	g	**13.6**	**74.6**	----	----	----
Synthetic Mineral Fibre	----	-	-	**No**	**No**	----	----	----
Organic Fibre	----	-	-	**No**	**No**	----	----	----
APPROVED IDENTIFIER:	----	-	--	**B.SCHRADER**	**B.SCHRADER**	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOLID**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	ACM101 - 18-Apr-2023 00:00	One piece of asbestos cement sheeting approximately 35x30x5mm.
EA200: Description	ACM102 - 18-Apr-2023 00:00	One piece of asbestos cement sheeting approximately 80x45x5mm.
EA200: Description	ACM103 - 19-Apr-2023 00:00	One piece of asbestos cement sheeting approximately 45x35x5mm.
EA200: Description	ACM104 - 19-Apr-2023 00:00	One piece of asbestos cement sheeting approximately 60x40x5mm.
EA200: Description	ACM105 - 20-Apr-2023 00:00	One piece of asbestos cement sheeting approximately 35x30x5mm.
EA200: Description	TP109_0-0.1 - 18-Apr-2023 00:00	One piece of asbestos cement sheeting approximately 40x35x5mm.
EA200: Description	TP113_0.4-0.5 - 19-Apr-2023 00:00	Several pieces of asbestos cement sheeting approximately 85x60x5mm.

Surrogate Control Limits

Sub-Matrix: **SOIL**

		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	63	125
Toluene-D8	2037-26-5	67	124
4-Bromofluorobenzene	460-00-4	66	131

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOLID) EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples

QUALITY CONTROL REPORT

Work Order	: **ES2313408**	Page	: 1 of 13
Client	: **CAVVANBA CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: MR DREW WOOD	Contact	: Karen Coveny
Address	: PO Box 322 NEWCASTLE 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 6685 7811	Telephone	: +61-2-8784 8555
Project	: 20025.76	Date Samples Received	: 21-Apr-2023
Order number	: 20025.76	Date Analysis Commenced	: 28-Apr-2023
C-O-C number	: ----	Issue Date	: 04-May-2023
Sampler	: ZAC LAUGHLAN		
Site	: ----		
Quote number	: SYBQ/409/21		
No. of samples received	: 71		
No. of samples analysed	: 36		

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5020364)									
ES2313408-003	TP105_0-0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	13	14	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	14	12	18.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	19	18	7.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	125	124	1.1	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	290	310	6.5	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	208	220	5.8	0% - 20%
ES2313408-017	TP112_0-0.1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	38	45	16.5	0% - 20%
		EG005T: Nickel	7440-02-0	2	mg/kg	24	24	0.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	11	25.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	630	715	12.6	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	530	622	15.9	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	394	400	1.4	0% - 20%
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5020366)									
ES2313408-055	QS101	EG005T: Cadmium	7440-43-9	1	mg/kg	4	5	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	40	38	4.8	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	35	# 44	23.1	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	139	140	0.0	0% - 20%
		EG005T: Copper	7440-50-8	5	mg/kg	414	468	12.3	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	1220	1360	10.6	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	949	803	16.6	0% - 20%
ES2313747-005	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	27	18	42.1	0% - 50%

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 5020366) - continued									
ES2313747-005	Anonymous	EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	<5	39.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5020368)									
ES2313408-005	TP106_0-0.1	EA055: Moisture Content	----	0.1	%	17.6	18.5	5.0	0% - 50%
ES2313408-021	TP114_0-0.1	EA055: Moisture Content	----	0.1	%	15.0	12.8	15.6	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 5020369)									
ES2313408-057	QS105	EA055: Moisture Content	----	0.1	%	16.3	15.6	4.5	0% - 50%
ES2313747-008	Anonymous	EA055: Moisture Content	----	0.1	%	16.2	15.5	4.3	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5020365)									
ES2313408-003	TP105_0-0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2313408-017	TP112_0-0.1	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5020367)									
ES2313408-055	QS101	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.2	0.0	No Limit
ES2313747-005	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014071)									
ES2313346-071	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2313408-011	TP109_0-0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014071) - continued									
ES2313408-011	TP109_0-0.1	EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	0.6	19.7	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	0.6	18.2	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014073)									
ES2313346-069	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5014073) - continued									
ES2313408-060	QS111	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5014070)									
ES2313346-071	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313408-011	TP109_0-0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	130	130	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5014072)									
ES2313346-069	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	130	110	13.8	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313408-060	QS111	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5020213)									
ES2313845-007	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2313845-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5020316)									
ES2313408-003	TP105_0-0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5020316) - continued									
ES2313408-017	TP112_0-0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5020323)									
ES2313408-055	QS101	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2313747-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5014070)									
ES2313346-071	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313408-011	TP109_0-0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	190	180	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5014072)									
ES2313346-069	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	190	160	17.9	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2313408-060	QS111	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5020213)									
ES2313845-007	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2313845-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5020316)									
ES2313408-003	TP105_0-0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2313408-017	TP112_0-0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5020323)									
ES2313408-055	QS101	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2313747-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 5020213)									
ES2313845-007	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2313845-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 5020213) - continued									
ES2313845-001	Anonymous	EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 5020316)									
ES2313408-003	TP105_0-0.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2313408-017	TP112_0-0.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 5020323)									
ES2313408-055	QS101	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES2313747-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5020364)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	88.0	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	74.5	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	108	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	99.0	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	91.9	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	95.7	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	86.3	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5020366)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	94.5	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	77.7	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	109	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	96.9	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	97.3	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	95.3	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	88.0	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5020365)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	94.2	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5020367)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	84.5	70.0	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014071)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	88.9	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	84.0	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	89.4	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	89.8	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	92.0	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	87.2	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	93.9	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	93.1	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	84.6	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	89.4	75.0	127

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	**CAS Number**	**LOR**	**Unit**	**Result**	**Concentration**	**LCS**	**Low**	**High**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014071) - continued								
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	85.4	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	95.3	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	79.8	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	91.5	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	88.6	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	88.3	63.0	121
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014073)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	95.8	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	91.1	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	94.8	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	89.2	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	104	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	89.4	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	105	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	103	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	95.0	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	97.6	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	94.4	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	104	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	92.2	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	96.2	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	101	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	102	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014070)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	107	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	96.0	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	92.5	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014072)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	89.6	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	100	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	92.2	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5020213)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	97.5	72.2	131

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*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5020316)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	91.3	72.2	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5020323)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	102	72.2	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014070)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	91.4	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	101	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	101	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014072)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	103	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	88.4	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	106	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5020213)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	102	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5020316)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	96.2	72.4	133
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5020323)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	104	72.4	133
EP080: BTEXN (QCLot: 5020213)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	99.3	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	101	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	99.4	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	102	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	99.6	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	103	78.8	122
EP080: BTEXN (QCLot: 5020316)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	92.0	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	95.0	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	95.7	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	102	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	96.0	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	95.2	78.8	122
EP080: BTEXN (QCLot: 5020323)								

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
						Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Low	High
EP080: BTEXN (QCLot: 5020323) - continued								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	95.5	76.0	124
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	93.4	78.5	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	95.4	77.4	121
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	97.1	78.2	121
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	95.4	81.3	121
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	104	78.8	122

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
					SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5020364)							
ES2313408-003	TP105_0-0.1	EG005T: Arsenic	7440-38-2	50 mg/kg	96.9	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.8	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	95.2	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	98.7	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	106	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	94.3	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	113	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 5020366)							
ES2313408-055	QS101	EG005T: Arsenic	7440-38-2	50 mg/kg	98.6	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	95.7	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	129	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	128	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	# Not Determined	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	117	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	74.8	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5020365)							
ES2313408-003	TP105_0-0.1	EG035T: Mercury	7439-97-6	5 mg/kg	101	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5020367)							
ES2313408-055	QS101	EG035T: Mercury	7439-97-6	5 mg/kg	103	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014071)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014071) - continued							
ES2313346-071	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	95.9	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	99.4	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5014073)							
ES2313346-069	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	101	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	98.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014070)							
ES2313346-071	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	99.2	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	83.8	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	110	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5014072)							
ES2313346-069	Anonymous	EP071: C10 - C14 Fraction	----	480 mg/kg	110	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	110	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	106	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5020213)							
ES2313845-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	83.5	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5020316)							
ES2313408-003	TP105_0-0.1	EP080: C6 - C9 Fraction	----	32.5 mg/kg	101	60.4	142
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5020323)							
ES2313747-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	97.8	60.4	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014070)							
ES2313346-071	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	99.3	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	94.9	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	116	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5014072)							
ES2313346-069	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	98.3	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	109	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	90.5	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5020213)							
ES2313845-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	85.4	61.1	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5020316)							
ES2313408-003	TP105_0-0.1	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	101	61.1	142
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5020323)							
ES2313747-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	101	61.1	142
EP080: BTEXN (QCLot: 5020213)							
ES2313845-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	78.1	62.1	122

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080: BTEXN (QCLot: 5020213) - continued							
ES2313845-001	Anonymous	EP080: Toluene	108-88-3	2.5 mg/kg	82.2	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	83.9	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	84.4	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	85.2	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	79.3	61.1	115
EP080: BTEXN (QCLot: 5020316)							
ES2313408-003	TP105_0-0.1	EP080: Benzene	71-43-2	2.5 mg/kg	102	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	98.2	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	105	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	105	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	105	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	76.2	61.1	115
EP080: BTEXN (QCLot: 5020323)							
ES2313747-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	89.0	62.1	122
		EP080: Toluene	108-88-3	2.5 mg/kg	89.4	66.6	119
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	92.4	67.4	123
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	90.7	66.4	121
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	92.0	70.7	121
		EP080: Naphthalene	91-20-3	2.5 mg/kg	95.0	61.1	115

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2313408**	Page	: 1 of 9
Client	: **CAVVANBA CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: MR DREW WOOD	Telephone	: +61-2-8784 8555
Project	: 20025.76	Date Samples Received	: 21-Apr-2023
Site	: ----	Issue Date	: 04-May-2023
Sampler	: ZAC LAUGHLAN	No. of samples received	: 71
Order number	: 20025.76	No. of samples analysed	: 36

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Duplicate outliers exist - please see following pages for full details.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	**Analyte**	CAS Number	Data	Limits	**Comment**
Duplicate (DUP) RPDs							
EG005(ED093)T: Total Metals by ICP-AES	ES2313408--055	QS101	**Nickel**	7440-02-0	23.1 %	0% - 20%	**RPD exceeds LOR based limits**
Matrix Spike (MS) Recoveries							
EG005(ED093)T: Total Metals by ICP-AES	ES2313408--055	QS101	**Lead**	7439-92-1	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	**Analyte**	CAS Number	Data	Limits	**Comment**
Samples Submitted							
EP075(SIM)S: Phenolic Compound Surrogates	ES2313408-005	TP106_0-0.1	**Phenol-d6**	13127-88-3	51.0 %	63.0-123 %	**Recovery less than lower data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES2313408-014	TP110_0.3-0.4	**Phenol-d6**	13127-88-3	55.2 %	63.0-123 %	**Recovery less than lower data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES2313408-005	TP106_0-0.1	**2-Chlorophenol-D4**	93951-73-6	64.4 %	66.0-122 %	**Recovery less than lower data quality objective**
EP075(SIM)S: Phenolic Compound Surrogates	ES2313408-014	TP110_0.3-0.4	**2-Chlorophenol-D4**	93951-73-6	61.5 %	66.0-122 %	**Recovery less than lower data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **SOIL**

Method	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EP080: BTEXN						
Soil Glass Jar - Unpreserved						
Trip Spike, Trip Spike Control	01-May-2023	25-Apr-2023	**6**	02-May-2023	25-Apr-2023	**7**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

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

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

Matrix: **SOIL**

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

Method	**Sample Date**	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		**Date extracted**	Due for extraction	Evaluation	**Date analysed**	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) TP105_0-0.1, TP105_0.3-0.4, TP106_0-0.1, TP107_0-0.1, TP107_0.3-0.4, QS101, QS103	**18-Apr-2023**	**----**	----	----	**01-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EA055) TP108_0-0.1, TP109_0-0.1, TP110_0-0.1, TP110_0.3-0.4, TP111_0-0.1, TP112_0-0.1, TP113_0-0.1, TP113_0.4-0.5, MW103_0.2-0.3, QS105	**19-Apr-2023**	**----**	----	----	**01-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EA055) TP114_0-0.1, TP115_0-0.1, TP115_0.3-0.4, TP116_0-0.1, TP117_0-0.1, TP118_0-0.1, QS107, QS109, QS111	**20-Apr-2023**	**----**	----	----	**01-May-2023**	04-May-2023	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) TP105_0-0.1, TP105_0.3-0.4, TP106_0-0.1, TP107_0-0.1, TP107_0.3-0.4, QS101, QS103	**18-Apr-2023**	**01-May-2023**	15-Oct-2023	✓	**02-May-2023**	15-Oct-2023	✓
Soil Glass Jar - Unpreserved (EG005T) TP108_0-0.1, TP109_0-0.1, TP110_0-0.1, TP110_0.3-0.4, TP111_0-0.1, TP112_0-0.1, TP113_0-0.1, TP113_0.4-0.5, MW103_0.2-0.3, QS105	**19-Apr-2023**	**01-May-2023**	16-Oct-2023	✓	**02-May-2023**	16-Oct-2023	✓
Soil Glass Jar - Unpreserved (EG005T) TP114_0-0.1, TP115_0-0.1, TP115_0.3-0.4, TP116_0-0.1, TP117_0-0.1, TP118_0-0.1, QS107, QS109, QS111	**20-Apr-2023**	**01-May-2023**	17-Oct-2023	✓	**02-May-2023**	17-Oct-2023	✓

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*
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) TP105_0-0.1, TP105_0.3-0.4, TP106_0-0.1, TP107_0-0.1, TP107_0.3-0.4, QS101, QS103	**18-Apr-2023**	**01-May-2023**	16-May-2023	✓	**03-May-2023**	16-May-2023	✓
Soil Glass Jar - Unpreserved (EG035T) TP108_0-0.1, TP109_0-0.1, TP110_0-0.1, TP110_0.3-0.4, TP111_0-0.1, TP112_0-0.1, TP113_0-0.1, TP113_0.4-0.5, MW103_0.2-0.3, QS105	**19-Apr-2023**	**01-May-2023**	17-May-2023	✓	**03-May-2023**	17-May-2023	✓
Soil Glass Jar - Unpreserved (EG035T) TP114_0-0.1, TP115_0-0.1, TP115_0.3-0.4, TP116_0-0.1, TP117_0-0.1, TP118_0-0.1, QS107, QS109, QS111	**20-Apr-2023**	**01-May-2023**	18-May-2023	✓	**03-May-2023**	18-May-2023	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) TP105_0-0.1, TP105_0.3-0.4, TP106_0-0.1, TP107_0-0.1, TP107_0.3-0.4, QS101, QS103	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) TP108_0-0.1, TP109_0-0.1, MW103_0.2-0.3, QS105	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) TP110_0-0.1, TP110_0.3-0.4, TP111_0-0.1, TP112_0-0.1, TP113_0-0.1, TP113_0.4-0.5	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**04-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) TP116_0-0.1, TP117_0-0.1, TP118_0-0.1, QS107, QS109, QS111	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) TP114_0-0.1, TP115_0-0.1, TP115_0.3-0.4	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**04-May-2023**	10-Jun-2023	✓

Matrix: **SOIL**

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

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
Container */ Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080) Trip Blank	**17-Apr-2023**	**01-May-2023**	01-May-2023	✓	**01-May-2023**	01-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP105_0-0.1, TP105_0.3-0.4, TP106_0-0.1, TP107_0-0.1, TP107_0.3-0.4, QS101, QS103	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) TP105_0-0.1, TP105_0.3-0.4, TP106_0-0.1, TP107_0-0.1, TP107_0.3-0.4, QS101, QS103	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP108_0-0.1, TP109_0-0.1, TP110_0-0.1, TP110_0.3-0.4, TP111_0-0.1, TP112_0-0.1, TP113_0-0.1, TP113_0.4-0.5, MW103_0.2-0.3, QS105	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**02-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) TP108_0-0.1, TP109_0-0.1, TP110_0-0.1, TP110_0.3-0.4, TP111_0-0.1, TP112_0-0.1, TP113_0-0.1, TP113_0.4-0.5, MW103_0.2-0.3, QS105	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP114_0-0.1, TP115_0-0.1, TP115_0.3-0.4, TP116_0-0.1, TP117_0-0.1, TP118_0-0.1, QS107, QS109, QS111	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**02-May-2023**	04-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) TP114_0-0.1, TP115_0-0.1, TP115_0.3-0.4, TP116_0-0.1, TP117_0-0.1, TP118_0-0.1, QS107, QS109, QS111	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**03-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*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080) Trip Blank	**17-Apr-2023**	**01-May-2023**	01-May-2023	✓	**01-May-2023**	01-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP105_0-0.1, TP105_0.3-0.4, TP106_0-0.1, TP107_0-0.1, TP107_0.3-0.4, QS101, QS103	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) TP105_0-0.1, TP105_0.3-0.4, TP106_0-0.1, TP107_0-0.1, TP107_0.3-0.4, QS101, QS103	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP108_0-0.1, TP109_0-0.1, TP110_0-0.1, TP110_0.3-0.4, TP111_0-0.1, TP112_0-0.1, TP113_0-0.1, TP113_0.4-0.5, MW103_0.2-0.3, QS105	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**02-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) TP108_0-0.1, TP109_0-0.1, TP110_0-0.1, TP110_0.3-0.4, TP111_0-0.1, TP112_0-0.1, TP113_0-0.1, TP113_0.4-0.5, MW103_0.2-0.3, QS105	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**03-May-2023**	10-Jun-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP114_0-0.1, TP115_0-0.1, TP115_0.3-0.4, TP116_0-0.1, TP117_0-0.1, TP118_0-0.1, QS107, QS109, QS111	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**02-May-2023**	04-May-2023	✓
Soil Glass Jar - Unpreserved (EP071) TP114_0-0.1, TP115_0-0.1, TP115_0.3-0.4, TP116_0-0.1, TP117_0-0.1, TP118_0-0.1, QS107, QS109, QS111	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**03-May-2023**	10-Jun-2023	✓

Matrix: **SOIL**

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

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
***Container** / Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080) Trip Spike, Trip Spike Control	**11-Apr-2023**	**01-May-2023**	25-Apr-2023	✗	**02-May-2023**	25-Apr-2023	✗
Soil Glass Jar - Unpreserved (EP080) Trip Blank	**17-Apr-2023**	**01-May-2023**	01-May-2023	✓	**01-May-2023**	01-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP105_0-0.1, TP105_0.3-0.4, TP106_0-0.1, TP107_0-0.1, TP107_0.3-0.4, QS101, QS103	**18-Apr-2023**	**01-May-2023**	02-May-2023	✓	**02-May-2023**	02-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP108_0-0.1, TP109_0-0.1, TP110_0-0.1, TP110_0.3-0.4, TP111_0-0.1, TP112_0-0.1, TP113_0-0.1, TP113_0.4-0.5, MW103_0.2-0.3, QS105	**19-Apr-2023**	**01-May-2023**	03-May-2023	✓	**02-May-2023**	03-May-2023	✓
Soil Glass Jar - Unpreserved (EP080) TP114_0-0.1, TP115_0-0.1, TP115_0.3-0.4, TP116_0-0.1, TP117_0-0.1, TP118_0-0.1, QS107, QS109, QS111	**20-Apr-2023**	**01-May-2023**	04-May-2023	✓	**02-May-2023**	04-May-2023	✓

Matrix: **SOLID**

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

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
***Container** / Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) ACM101, ACM102, TP109_0-0.1	**18-Apr-2023**	**----**	----	----	**28-Apr-2023**	15-Oct-2023	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) ACM103, ACM104, TP113_0.4-0.5	**19-Apr-2023**	**----**	----	----	**28-Apr-2023**	16-Oct-2023	✓
Snap Lock Bag - Friable Asbestos/PSD Bag (EA200) ACM105	**20-Apr-2023**	**----**	----	----	**28-Apr-2023**	17-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	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	6	59	**10.17**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	59	**5.08**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	59	**5.08**	**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).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Asbestos Identification in Bulk Solids	EA200	SOLID	In house: Referenced to AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order	: **ES2313408**		
Client	: **CAVVANBA CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: MR DREW WOOD	Contact	: Karen Coveny
Address	: PO Box 322 NEWCASTLE 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: drew@cavvanba.com	E-mail	: karen.coveny@alsglobal.com
Telephone	: +61 02 6685 7811	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 6685 5083	Facsimile	: +61-2-8784 8500
Project	: 20025.76	Page	: 1 of 4
Order number	: 20025.76	Quote number	: EB2017CAVCON0001 (SYBQ/409/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: ZAC LAUGHLAN		

Dates

Date Samples Received	: 21-Apr-2023 19:40	Issue Date	: 26-Apr-2023
Client Requested Due Date	: 04-May-2023	Scheduled Reporting Date	: **04-May-2023**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Not Available
No. of coolers/boxes	: 5	Temperature	: 5.8'C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 71 / 36

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This workorder has been split from ES2313346.**
- **Sample QS102, QS104, QS106, QS108, QS110 & QS112 will be sent to Eurofins for analysis.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

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

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

ES2313408-071 : [19-Apr-2023] : MW101_7.0-7.1 - Received as extra sample

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP080 BTEXN	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2313408-001	18-Apr-2023 00:00	TP104_0.2-0.3	✓				
ES2313408-002	18-Apr-2023 00:00	TP104_0.3-0.4	✓				
ES2313408-003	18-Apr-2023 00:00	TP105_0-0.1		✓			✓
ES2313408-004	18-Apr-2023 00:00	TP105_0.3-0.4		✓			✓
ES2313408-005	18-Apr-2023 00:00	TP106_0-0.1		✓			✓
ES2313408-006	18-Apr-2023 00:00	TP106_0.3-0.4	✓				
ES2313408-007	18-Apr-2023 00:00	TP107_0-0.1		✓			✓
ES2313408-008	18-Apr-2023 00:00	TP107_0.3-0.4		✓			✓
ES2313408-009	19-Apr-2023 00:00	TP108_0-0.1		✓			✓
ES2313408-010	19-Apr-2023 00:00	TP108_0.3-0.4	✓				
ES2313408-011	19-Apr-2023 00:00	TP109_0-0.1		✓			✓
ES2313408-012	19-Apr-2023 00:00	TP109_0.5-0.6	✓				
ES2313408-013	19-Apr-2023 00:00	TP110_0-0.1		✓			✓
ES2313408-014	19-Apr-2023 00:00	TP110_0.3-0.4		✓			✓
ES2313408-015	19-Apr-2023 00:00	TP111_0-0.1		✓			✓
ES2313408-016	19-Apr-2023 00:00	TP111_0.3-0.4	✓				
ES2313408-017	19-Apr-2023 00:00	TP112_0-0.1		✓			✓
ES2313408-018	19-Apr-2023 00:00	TP112_0.3-0.4	✓				
ES2313408-019	19-Apr-2023 00:00	TP113_0-0.1		✓			✓
ES2313408-020	19-Apr-2023 00:00	TP113_0.4-0.5		✓			✓
ES2313408-021	20-Apr-2023 00:00	TP114_0-0.1		✓			✓
ES2313408-022	20-Apr-2023 00:00	TP114_0.3-0.4	✓				
ES2313408-023	20-Apr-2023 00:00	TP115_0-0.1		✓			✓
ES2313408-024	20-Apr-2023 00:00	TP115_0.3-0.4		✓			✓
ES2313408-025	20-Apr-2023 00:00	TP116_0-0.1		✓			✓
ES2313408-026	20-Apr-2023 00:00	TP116_0.3-0.4	✓				
ES2313408-027	20-Apr-2023 00:00	TP117_0-0.1		✓			✓
ES2313408-028	20-Apr-2023 00:00	TP117_0.3-0.4	✓				
ES2313408-029	20-Apr-2023 00:00	TP118_0-0.1		✓			✓
ES2313408-030	20-Apr-2023 00:00	TP118_0.3-0.4	✓				
ES2313408-031	19-Apr-2023 00:00	MW101_0-0.1	✓				
ES2313408-032	19-Apr-2023 00:00	MW101_0.5-0.6	✓				
ES2313408-033	19-Apr-2023 00:00	MW101_0.8-0.9	✓				

			(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - EP080 BTEXN	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2313408-034	21-Apr-2023 00:00	MW101_2.5-2.6	✓				
ES2313408-035	21-Apr-2023 00:00	MW101_5.0-5.1	✓				
ES2313408-036	19-Apr-2023 00:00	MW102_0-0.1	✓				
ES2313408-037	19-Apr-2023 00:00	MW102_0.5-0.6	✓				
ES2313408-038	19-Apr-2023 00:00	MW102_1.2-1.3	✓				
ES2313408-039	21-Apr-2023 00:00	MW102_2.0-2.1	✓				
ES2313408-040	21-Apr-2023 00:00	MW102_3.0-3.1	✓				
ES2313408-041	21-Apr-2023 00:00	MW102_4.0-4.1	✓				
ES2313408-042	21-Apr-2023 00:00	MW102_5.0-5.1	✓				
ES2313408-043	21-Apr-2023 00:00	MW102_6.0-6.1	✓				
ES2313408-044	21-Apr-2023 00:00	MW102_7.0-7.1	✓				
ES2313408-045	19-Apr-2023 00:00	MW103_0-0.1	✓				
ES2313408-046	19-Apr-2023 00:00	MW103_0.2-0.3		✓			✓
ES2313408-047	19-Apr-2023 00:00	MW103_0.5-0.6	✓				
ES2313408-048	19-Apr-2023 00:00	MW103_1.2-1.3	✓				
ES2313408-049	20-Apr-2023 00:00	MW103_2.0-2.1	✓				
ES2313408-050	20-Apr-2023 00:00	MW103_3.0-3.1	✓				
ES2313408-051	20-Apr-2023 00:00	MW103_4.0-4.1	✓				
ES2313408-052	20-Apr-2023 00:00	MW103_5.0-5.1	✓				
ES2313408-053	20-Apr-2023 00:00	MW103_6.0-6.1	✓				
ES2313408-054	20-Apr-2023 00:00	MW103_7.0-7.1	✓				
ES2313408-055	18-Apr-2023 00:00	QS101		✓			✓
ES2313408-056	18-Apr-2023 00:00	QS103		✓			✓
ES2313408-057	19-Apr-2023 00:00	QS105		✓			✓
ES2313408-058	20-Apr-2023 00:00	QS107		✓			✓
ES2313408-059	20-Apr-2023 00:00	QS109		✓			✓
ES2313408-060	20-Apr-2023 00:00	QS111		✓			✓
ES2313408-066	17-Apr-2023 00:00	Trip Blank				✓	
ES2313408-067	11-Apr-2023 00:00	Trip Spike			✓		
ES2313408-068	11-Apr-2023 00:00	Trip Spike Control			✓		
ES2313408-071	19-Apr-2023 00:00	MW101_7.0-7.1 Recei...	✓				

Matrix: **SOLID**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	SOLID - EA200B Asbestos Identification in Bulk Solids (Excluding
ES2313408-061	18-Apr-2023 00:00	ACM101	✓
ES2313408-062	18-Apr-2023 00:00	ACM102	✓
ES2313408-063	19-Apr-2023 00:00	ACM103	✓
ES2313408-064	19-Apr-2023 00:00	ACM104	✓
ES2313408-065	20-Apr-2023 00:00	ACM105	✓
ES2313408-069	18-Apr-2023 00:00	TP109_0-0.1	✓
ES2313408-070	19-Apr-2023 00:00	TP113_0.4-0.5	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	inbox@cavvanba.com
DREW WOOD		
- *AU Certificate of Analysis - NATA (COA)	Email	drew@cavvanba.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	drew@cavvanba.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	drew@cavvanba.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	drew@cavvanba.com
- A4 - AU Tax Invoice (INV)	Email	drew@cavvanba.com
- Chain of Custody (CoC) (COC)	Email	drew@cavvanba.com
- EDI Format - ENMRG (ENMRG)	Email	drew@cavvanba.com
ROB MCLELLAND		
- A4 - AU Tax Invoice (INV)	Email	rob@cavvanba.com
ZAC LAUGHLAN		
- *AU Certificate of Analysis - NATA (COA)	Email	zac@cavvanba.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	zac@cavvanba.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	zac@cavvanba.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	zac@cavvanba.com
- Chain of Custody (CoC) (COC)	Email	zac@cavvanba.com
- EDI Format - ENMRG (ENMRG)	Email	zac@cavvanba.com

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Cavvanba Consulting
OFFICE: Newcastle
PROJECT: 20025.76
ORDER NUMBER: 20025.76
PROJECT MANAGER: Drew Wood CONTACT PH: 0403 689 755
SAMPLER: Zac Laughlan SAMPLER MOBILE: 0428 288 854
COC emailed to ALS? (YES / NO) EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 [✓ 5] 6 7 8 9 10 11
OF: 1 2 3 4 [✓ 5] 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 24/04/2023	DATE/TIME: 24/4/23 9:50	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)												Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN										Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TP104_0.2-0.3	18/04/2023	Soil		1													
2	TP104_0.3-0.4	18/04/2023	Soil		1													
3	TP105_0-0.1	18/04/2023	Soil		1	X												
4	TP105_0.3-0.4	18/04/2023	Soil		1	X												
5	TP106_0-0.1	18/04/2023	Soil		1	X												
6	TP106_0.3-0.4	18/04/2023	Soil		1													
7	TP107_0-0.1	18/04/2023	Soil		1	X												
8	TP107_0.3-0.4	18/04/2023	Soil		1	X												
9	TP108_0-0.1	19/04/2023	Soil		1	X												
10	TP108_0.3-0.4	19/04/2023	Soil		1													
11	TP109_0-0.1	19/04/2023	Soil		1	X	X											
12	TP109_0.5-0.6	19/04/2023	Soil		1													
13	TP110_0-0.1	19/04/2023	Soil		1	X												
14	TP110_0.3-0.4	19/04/2023	Soil		1	X												
15	TP111_0-0.1	19/04/2023	Soil		1	X												
16	TP111_0.3-0.4	19/04/2023	Soil		1													
17	TP112_0-0.1	19/04/2023	Soil		1	X												
18	TP112_0.3-0.4	19/04/2023	Soil		1													
19	TP113_0-0.1	19/04/2023	Soil		1	X												
20	TP113_0.4-0.5	19/04/2023	Soil		1	X	X											
21	TP114_0-0.1	20/04/2023	Soil		1	X												
				TOTAL														

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

Environmental Division
Sydney
Work Order Reference
ES2313408

Telephone : + 61-2-8784 8555

Subcon / Forward Lab / Split WO ES2315346
Lab / Analysis:
Organised By / Date:
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
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☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Cavvanba Consulting
OFFICE: Newcastle
PROJECT: 20025.76
ORDER NUMBER: 20025.76
PROJECT MANAGER: Drew Wood CONTACT PH: 0403 689 755
SAMPLER: Zac Laughlan SAMPLER MOBILE: 0428 288 854
COC emailed to ALS? (YES / NO) EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7 8 9 10 11
OF: 1 2 3 4 [✓ 5] 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 24/04/2023	[illegible] DATE/TIME: 24/4/23 [illegible]	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
22	TP114_0.3-0.4	20/04/2023	Soil		1										
23	TP115_0-0.1	20/04/2023	Soil		1	X									
24	TP115_0.3-0.4	20/04/2023	Soil		1	X									
25	TP116_0-0.1	20/04/2023	Soil		1	X									
26	TP116_0.3-0.4	20/04/2023	Soil		1										
27	TP117_0-0.1	20/04/2023	Soil		1	X									
28	TP117_0.3-0.4	20/04/2023	Soil		1										
29	TP118_0-0.1	20/04/2023	Soil		1	X									
30	TP118_0.3-0.4	20/04/2023	Soil		1										
31	MW101_0-0.1	19/04/2023	Soil		1										
32	MW101_0.5-0.6	19/04/2023	Soil		1										
33	MW101_0.8-0.9	19/04/2023	Soil		1										
34	MW101_2.5-2.6	21/04/2023	Soil		1										
35	MW101_5.0-5.1	21/04/2023	Soil		1										
36	MW102_0-0.1	19/04/2023	Soil		1										
37	MW102_0.5-0.6	19/04/2023	Soil		1										
38	MW102_1.2-1.3	19/04/2023	Soil		1										
39	MW102_2.0-2.1	21/04/2023	Soil		1										
40	MW102_3.0-3.1	21/04/2023	Soil		1										
41	MW102_4.0-4.1	21/04/2023	Soil		1										
				TOTAL											

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial 1
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
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TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7 8 9 10 11
OF: 1 2 3 4 5 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 24/04/2023	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
42	MW102_5.0-5.1	21/04/2023	Soil		1										
43	MW102_6.0-6.1	21/04/2023	Soil		1										
44	MW102_7.0-7.1	21/04/2023	Soil		1										
45	MW103_0-0.1	19/04/2023	Soil		1										
46	MW103_0.2-0.3	19/04/2023	Soil		1	X									
47	MW103_0.5-0.6	19/04/2023	Soil		1										
48	MW103_1.2-1.3	19/04/2023	Soil		1										
49	MW103_2.0-2.1	20/04/2023	Soil		1										
50	MW103_3.0-3.1	20/04/2023	Soil		1										
51	MW103_4.0-4.1	20/04/2023	Soil		1										
52	MW103_5.0-5.1	20/04/2023	Soil		1										
53	MW103_6.0-6.1	20/04/2023	Soil		1										
54	MW103_7.0-7.1	20/04/2023	Soil		1										
55	QS101	18/04/2023	Soil		1	X									
X	QS102	18/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals									
56	QS103	18/04/2023	Soil		1	X									
X	QS104	18/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals									
57	QS105	19/04/2023	Soil		1	X									
X	QS106	19/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals									
58	QS107	20/04/2023	Soil		1	X									
X	QS108	20/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals									
				TOTAL											

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
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☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: Cavvanba Consulting
OFFICE: Newcastle
PROJECT: 20025.76
ORDER NUMBER: 20025.76
PROJECT MANAGER: Drew Wood   CONTACT PH: 0403 689 755
SAMPLER: Zac Laughlan   SAMPLER MOBILE: 0428 288 854
COC emailed to ALS? (YES / NO)   EDD FORMAT (or default):
Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☒ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7 8 9 10 11
OF: 1 2 3 4 5 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comment			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 24/04/2023	DATE/TIME: 24/4/23 9:52	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
59	QS109	20/04/2023	Soil		1	X									
x	QS110	20/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals									
60	QS111	20/04/2023	Soil		1	X									
x	QS112	20/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals									
61	ACM101	18/04/2023	Soil		1		X								
62	ACM102	18/04/2023	Soil		1		X								
63	ACM103	19/04/2023	Soil		1		X								
64	ACM104	19/04/2023	Soil		1		X								
65	ACM105	20/04/2023	Soil		1		X								
66	Trip Blank		Soil		1			X							
67	Trip Spike		Soil		1			X							
68	TSC		Soil												
			Soil												
			Soil												
			Soil												
			Soil												
			Soil												
			Soil												
			Soil												
			Soil												
TOTAL															

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

CERTIFICATE OF ANALYSIS

Work Order	: **ES2313946**	Page	: 1 of 30
Client	: **CAVVANBA CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: MR DREW WOOD	Contact	: Karen Coveny
Address	: PO Box 322 NEWCASTLE 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 6685 7811	Telephone	: +61-2-8784 8555
Project	: 20025.75	Date Samples Received	: 28-Apr-2023 11:29
Order number	: ----	Date Analysis Commenced	: 29-Apr-2023
C-O-C number	: ----	Issue Date	: 05-May-2023 16:25
Sampler	: ZAC LAUGHLAN		
Site	: ----		
Quote number	: SY/159/20		
No. of samples received	: 26		
No. of samples analysed	: 26		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- EG050G: Poor spike recovery for Hexavalent Chromium due to matrix interferences(confirmed by re-analysis).
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- 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.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP074: Where reported, Total Trihalomethanes is the sum of the reported concentrations of all Trihalomethanes at or above the LOR.
- EP074: Where reported, Total Trimethylbenzenes is the sum of the reported concentrations of 1.2.3-Trimethylbenzene, 1.2.4-Trimethylbenzene and 1.3.5-Trimethylbenzene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EG020A-F: Positive results for sample ES2313946-017 have been confirmed by re-analysis.
- EP080: Sample TRIP SPIKE contains volatile compounds spiked into the sample containers prior to dispatch from the laboratory. BTEXN compounds spiked at 20 ug/L.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.
- EP231: Stable isotope enriched internal standards are added to samples prior to extraction. Target compounds have a direct analogous internal standard with the exception of PFPeS, PFHpA, PFDS, PFTrDA and 10:2 FTS. These compounds use an internal standard that is chemically related and has a retention time close to that of the target compound. The DQO for internal standard response is 50-150% of that established at initial calibration. PFOS is quantified using a certified, traceable standard consisting of linear and branched PFOS isomers. These practices are in line with recommendations in the National Environmental Management Plan for PFAS (Australian HEPA) and also conform to QSM 5.3 (US DoD) requirements.

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Sample ID	**W2**	**W3**	**MW01**	**MW02**	**MW03**
			Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-001**	**ES2313946-002**	**ES2313946-003**	**ES2313946-004**	**ES2313946-005**
				Result	Result	Result	Result	Result
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	----	----	**33**	**18**	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	**169**	**131**	**488**	**214**	**160**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	**0.007**	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	**0.026**	**0.010**	<0.001	<0.001	**0.003**
Copper	7440-50-8	0.001	mg/L	<0.001	**0.004**	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	----	----	**0.359**	**1.79**	----
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.002**	**0.002**	**0.002**	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	**0.011**	<0.005	<0.005	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG049F: Dissolved Trivalent Chromium								
Trivalent Chromium	16065-83-1	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	**0.03**	**0.01**	<0.01	<0.01	<0.01
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	----	----	<0.05	**2.80**	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	----	**0.06**	**0.35**	----
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	----	----	<10	**848**	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	<5
1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	<5
1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**W2**	**W3**	**MW01**	**MW02**	**MW03**
			Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-001**	**ES2313946-002**	**ES2313946-003**	**ES2313946-004**	**ES2313946-005**
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	<5
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**W2**	**W3**	**MW01**	**MW02**	**MW03**
			Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-001**	**ES2313946-002**	**ES2313946-003**	**ES2313946-004**	**ES2313946-005**
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Sample ID	**W2**	**W3**	**MW01**	**MW02**	**MW03**
			Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-001**	**ES2313946-002**	**ES2313946-003**	**ES2313946-004**	**ES2313946-005**
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	**370**	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	**370**	**1920**	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	**370**	**2290**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	**740**	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	**340**	**1560**	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	**340**	**2300**	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	<100	**740**	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**W2**	**W3**	**MW01**	**MW02**	**MW03**
			Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-001**	**ES2313946-002**	**ES2313946-003**	**ES2313946-004**	**ES2313946-005**
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.01**	**0.01**	**0.05**	**0.04**	<0.01
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	**0.08**	<0.01
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.01**	**0.01**	**0.05**	**0.12**	<0.01
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.01**	**0.01**	**0.05**	**0.12**	<0.01
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	5	%	**104**	**115**	**119**	**129**	**108**
Toluene-D8	2037-26-5	5	%	**108**	**116**	**122**	**129**	**105**
4-Bromofluorobenzene	460-00-4	5	%	**103**	**109**	**112**	**120**	**102**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	**18.5**	**19.7**	**17.6**	**22.9**	**19.9**
2-Chlorophenol-D4	93951-73-6	1.0	%	**44.3**	**46.8**	**42.8**	**51.7**	**45.2**
2.4.6-Tribromophenol	118-79-6	1.0	%	**55.8**	**61.9**	**61.8**	**76.0**	**51.7**
EP075(SIM)T: PAH Surrogates								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Sample ID	**W2**	**W3**	**MW01**	**MW02**	**MW03**
			Sampling date / time	27-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313946-001**	**ES2313946-002**	**ES2313946-003**	**ES2313946-004**	**ES2313946-005**
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	1.0	%	**54.4**	**60.8**	**60.4**	**65.8**	**56.1**
Anthracene-d10	1719-06-8	1.0	%	**70.3**	**69.4**	**74.0**	**84.8**	**66.7**
4-Terphenyl-d14	1718-51-0	1.0	%	**75.4**	**73.2**	**77.5**	**88.0**	**68.0**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**112**	**124**	**128**	**138**	**116**
Toluene-D8	2037-26-5	2	%	**116**	**125**	**131**	**127**	**113**
4-Bromofluorobenzene	460-00-4	2	%	**112**	**118**	**120**	**122**	**108**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**99.6**	**91.4**	**99.1**	**94.8**	**97.6**
13C8-PFOA	----	0.02	%	**104**	**104**	**103**	**101**	**104**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**MW04**	**MW05**	**MW06**	**MW07**	**MW09**
			Sampling date / time	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-006**	**ES2313946-007**	**ES2313946-008**	**ES2313946-009**	**ES2313946-010**
				Result	Result	Result	Result	Result
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**122**	**151**	**1**	**67**	**118**
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	**134**	**114**	----	**198**	**97**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	**0.012**	**0.002**	----	<0.001	**0.005**
Copper	7440-50-8	0.001	mg/L	**0.002**	<0.001	----	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	**0.975**	<0.001	**0.018**
Nickel	7440-02-0	0.001	mg/L	**0.001**	<0.001	----	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	----	<0.005	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	<0.0001	<0.0001
EG049F: Dissolved Trivalent Chromium								
Trivalent Chromium	16065-83-1	0.01	mg/L	<0.01	<0.01	----	<0.01	<0.01
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	**0.02**	<0.01	----	<0.01	<0.01
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	**3.98**	<0.05	<0.05	<0.05
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**3.78**	**1.80**	**0.03**	**18.9**	**1.06**
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	<10	<10	**637**	<10	<10
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	----	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	----	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	----	<5	<5
1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	----	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	----	<5	<5
1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	----	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	----	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	----	<5	<5

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Sample ID	**MW04**	**MW05**	**MW06**	**MW07**	**MW09**
			Sampling date / time	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-006**	**ES2313946-007**	**ES2313946-008**	**ES2313946-009**	**ES2313946-010**
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	----	<5	<5
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	----	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	----	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	----	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	----	<50	<50
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	----	<5	<5
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	----	<5	<5
1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	----	<5	<5
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	----	<5	<5
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	----	<5	<5
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	----	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	----	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	----	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	----	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	----	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	----	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	----	<50	<50
1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	----	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	----	<5	<5
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	----	<5	<5
1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	----	<5	<5
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	----	<5	<5
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	----	<5	<5
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	----	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	----	<5	<5
1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	----	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	----	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	----	<5	<5
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	----	<5	<5
1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	----	<5	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**MW04**	**MW05**	**MW06**	**MW07**	**MW09**
			Sampling date / time	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-006**	**ES2313946-007**	**ES2313946-008**	**ES2313946-009**	**ES2313946-010**
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	----	<5	<5
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	----	<5	<5
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	----	<5	<5
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	----	<5	<5
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	----	<5	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	----	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	----	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	----	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	----	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	----	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	----	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	----	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	----	<5	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	----	<5	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	----	<5	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	----	<5	<5
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	----	<5	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	----	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	----	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	----	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	----	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	----	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**MW04**	**MW05**	**MW06**	**MW07**	**MW09**
			Sampling date / time	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-006**	**ES2313946-007**	**ES2313946-008**	**ES2313946-009**	**ES2313946-010**
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	----	<1.0	<1.0
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L	<0.5	<0.5	----	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	----	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	----	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	----	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	----	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	<2	----	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	<1	----	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	----	<5	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**MW04**	**MW05**	**MW06**	**MW07**	**MW09**
			Sampling date / time	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-006**	**ES2313946-007**	**ES2313946-008**	**ES2313946-009**	**ES2313946-010**
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	**0.18**	----	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.04**	**0.89**	----	**0.04**	**0.02**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	**2.16**	----	<0.01	<0.01
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	----	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	**0.05**	----	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	**0.18**	----	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	----	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	**0.04**	----	<0.01	<0.01
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	----	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	----	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	----	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	----	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.04**	**3.05**	----	**0.04**	**0.02**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.04**	**3.50**	----	**0.04**	**0.02**
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	5	%	**108**	**112**	----	**104**	**108**
Toluene-D8	2037-26-5	5	%	**106**	**107**	----	**99.7**	**104**
4-Bromofluorobenzene	460-00-4	5	%	**101**	**103**	----	**95.8**	**99.9**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	**16.2**	**21.0**	----	**18.4**	**11.5**
2-Chlorophenol-D4	93951-73-6	1.0	%	**37.1**	**50.0**	----	**43.4**	**27.3**
2.4.6-Tribromophenol	118-79-6	1.0	%	**51.3**	**71.0**	----	**52.3**	**30.6**
EP075(SIM)T: PAH Surrogates								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Sample ID	**MW04**	**MW05**	**MW06**	**MW07**	**MW09**
			Sampling date / time	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313946-006**	**ES2313946-007**	**ES2313946-008**	**ES2313946-009**	**ES2313946-010**
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	1.0	%	**53.3**	**62.3**	**----**	**55.5**	**32.4**
Anthracene-d10	1719-06-8	1.0	%	**73.7**	**85.0**	**----**	**68.6**	**44.1**
4-Terphenyl-d14	1718-51-0	1.0	%	**80.4**	**89.0**	**----**	**72.2**	**47.7**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**116**	**120**	**----**	**112**	**116**
Toluene-D8	2037-26-5	2	%	**114**	**115**	**----**	**107**	**113**
4-Bromofluorobenzene	460-00-4	2	%	**109**	**108**	**----**	**102**	**106**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**96.7**	**95.0**	**----**	**94.7**	**97.6**
13C8-PFOA	----	0.02	%	**104**	**105**	**----**	**104**	**104**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**MW10**	**MW12**	**MW13**	**MW101**	**MW102**
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-011**	**ES2313946-012**	**ES2313946-013**	**ES2313946-014**	**ES2313946-015**
				Result	Result	Result	Result	Result
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**40**	**57**	**37**	**135**	**114**
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	**26**	**70**	**138**	**166**	**356**
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	**0.002**	**0.005**	<0.001	<0.001	**0.002**
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	**0.001**	<0.001
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	<0.001	**1.50**	**0.018**
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	**0.002**	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG049F: Dissolved Trivalent Chromium								
Trivalent Chromium	16065-83-1	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.62**	**2.31**	**4.09**	**23.1**	**29.7**
EP033: C1 - C4 Hydrocarbon Gases								
Methane	74-82-8	10	µg/L	<10	<10	<10	<10	<10
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	<5
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	<5
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	<5
1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	<5
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	<5
1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	<5
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	<5
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Sample ID	**MW10**	**MW12**	**MW13**	**MW101**	**MW102**
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-011**	**ES2313946-012**	**ES2313946-013**	**ES2313946-014**	**ES2313946-015**
				Result	Result	Result	Result	Result
EP074A: Monocyclic Aromatic Hydrocarbons - Continued								
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	<5
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	<50
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	<50
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	<50
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	<50
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	<5
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	<5
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	<5
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	<5
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	<5
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	<50
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	<50
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	<50
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	<50
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	<50
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	<50
1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	<5
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	<5
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	<5
1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	<5
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	<5
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	<5
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	<5
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	<5
1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	<5
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	<5
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	<5
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	<5
1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Sample ID	**MW10**	**MW12**	**MW13**	**MW101**	**MW102**
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-011**	**ES2313946-012**	**ES2313946-013**	**ES2313946-014**	**ES2313946-015**
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	<5
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	<5
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	<5
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	<5
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	<5
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	<5
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	<5
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	<5
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	<5
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	<5
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	<5
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	<5
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	<5
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	<5
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	<5
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	<5
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	<5
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	<5
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	<5
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	<5
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**MW10**	**MW12**	**MW13**	**MW101**	**MW102**
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-011**	**ES2313946-012**	**ES2313946-013**	**ES2313946-014**	**ES2313946-015**
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	<100	<100	<100	<100	<100
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	<2	<2	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**MW10**	**MW12**	**MW13**	**MW101**	**MW102**
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-011**	**ES2313946-012**	**ES2313946-013**	**ES2313946-014**	**ES2313946-015**
				Result	Result	Result	Result	Result
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.01**	**0.03**	**0.02**	**0.04**	**0.02**
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	**0.02**	<0.01	<0.01	<0.01
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	<0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EP231P: PFAS Sums								
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.01**	**0.05**	**0.02**	**0.04**	**0.02**
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.01**	**0.05**	**0.02**	**0.04**	**0.02**
EP074S: VOC Surrogates								
1.2-Dichloroethane-D4	17060-07-0	5	%	**106**	**118**	**113**	**120**	**107**
Toluene-D8	2037-26-5	5	%	**99.1**	**114**	**107**	**111**	**101**
4-Bromofluorobenzene	460-00-4	5	%	**96.0**	**108**	**102**	**106**	**96.3**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	**17.9**	**15.8**	**17.6**	**14.0**	**18.2**
2-Chlorophenol-D4	93951-73-6	1.0	%	**41.7**	**36.1**	**39.3**	**32.6**	**42.2**
2.4.6-Tribromophenol	118-79-6	1.0	%	**48.7**	**45.8**	**41.2**	**43.6**	**49.7**
EP075(SIM)T: PAH Surrogates								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Sample ID	**MW10**	**MW12**	**MW13**	**MW101**	**MW102**
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313946-011**	**ES2313946-012**	**ES2313946-013**	**ES2313946-014**	**ES2313946-015**
				Result	Result	Result	Result	Result
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	1.0	%	**56.7**	**43.9**	**49.4**	**44.5**	**57.5**
Anthracene-d10	1719-06-8	1.0	%	**70.6**	**55.0**	**59.7**	**59.2**	**71.6**
4-Terphenyl-d14	1718-51-0	1.0	%	**74.9**	**56.0**	**61.9**	**63.4**	**75.8**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**114**	**127**	**121**	**128**	**114**
Toluene-D8	2037-26-5	2	%	**107**	**123**	**116**	**119**	**109**
4-Bromofluorobenzene	460-00-4	2	%	**103**	**115**	**106**	**112**	**103**
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**90.2**	**92.1**	**98.7**	**95.2**	**93.8**
13C8-PFOA	----	0.02	%	**103**	**104**	**103**	**104**	**101**

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)	*Sample ID*			**MW103**	**QW01**	**SW01**	**SW02**	**RB1**
	Sampling date / time			27-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-016**	**ES2313946-017**	**ES2313946-018**	**ES2313946-019**	**ES2313946-020**
				Result	Result	Result	Result	Result
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**34**	----	----	----	----
ED093F: SAR and Hardness Calculations								
Total Hardness as CaCO3	----	1	mg/L	**186**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.003**	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.002**	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.398**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	<0.001	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.006**	<0.005	----	----	----
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	----	----	<0.001	<0.001	<0.001
Cadmium	7440-43-9	0.0001	mg/L	----	----	<0.0001	**0.0008**	<0.0001
Chromium	7440-47-3	0.001	mg/L	----	----	<0.001	**0.003**	<0.001
Copper	7440-50-8	0.001	mg/L	----	----	<0.001	**0.038**	<0.001
Nickel	7440-02-0	0.001	mg/L	----	----	<0.001	**0.003**	<0.001
Lead	7439-92-1	0.001	mg/L	----	----	**0.003**	**0.014**	<0.001
Zinc	7440-66-6	0.005	mg/L	----	----	**1.33**	**0.683**	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	----	----	<0.0001	<0.0001	<0.0001
EG049F: Dissolved Trivalent Chromium								
Trivalent Chromium	16065-83-1	0.01	mg/L	<0.01	----	----	----	----
EG050F: Dissolved Hexavalent Chromium								
Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	----	----	----	----
EG051G: Ferrous Iron by Discrete Analyser								
Ferrous Iron	----	0.05	mg/L	<0.05	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**1.01**	----	----	----	----
EP033: C1 - C4 Hydrocarbon Gases								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	MW103	QW01	SW01	SW02	RB1
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	18-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ES2313946-016	ES2313946-017	ES2313946-018	ES2313946-019	ES2313946-020
				Result	Result	Result	Result	Result
EP033: C1 - C4 Hydrocarbon Gases - Continued								
Methane	74-82-8	10	µg/L	<10	----	----	----	----
EP074A: Monocyclic Aromatic Hydrocarbons								
Styrene	100-42-5	5	µg/L	<5	<5	<5	<5	----
Isopropylbenzene	98-82-8	5	µg/L	<5	<5	<5	<5	----
n-Propylbenzene	103-65-1	5	µg/L	<5	<5	<5	<5	----
1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	<5	<5	----
sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	<5	<5	----
1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	<5	<5	----
tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	<5	<5	----
p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	<5	<5	----
n-Butylbenzene	104-51-8	5	µg/L	<5	<5	<5	<5	----
EP074B: Oxygenated Compounds								
Vinyl Acetate	108-05-4	50	µg/L	<50	<50	<50	<50	----
2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	<50	<50	----
4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	<50	<50	----
2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	<50	<50	----
EP074C: Sulfonated Compounds								
Carbon disulfide	75-15-0	5	µg/L	<5	<5	<5	<5	----
EP074D: Fumigants								
2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	<5	<5	----
1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	<5	<5	----
cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	<5	<5	----
trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	<5	<5	----
1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	<5	<5	----
EP074E: Halogenated Aliphatic Compounds								
Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	<50	<50	----
Chloromethane	74-87-3	50	µg/L	<50	<50	<50	<50	----
Vinyl chloride	75-01-4	50	µg/L	<50	<50	<50	<50	----
Bromomethane	74-83-9	50	µg/L	<50	<50	<50	<50	----
Chloroethane	75-00-3	50	µg/L	<50	<50	<50	<50	----
Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	<50	<50	----
1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	<5	<5	----
Iodomethane	74-88-4	5	µg/L	<5	<5	<5	<5	----
trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	<5	<5	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**MW103**	**QW01**	**SW01**	**SW02**	**RB1**
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-016**	**ES2313946-017**	**ES2313946-018**	**ES2313946-019**	**ES2313946-020**
				Result	Result	Result	Result	Result
EP074E: Halogenated Aliphatic Compounds - Continued								
1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	<5	<5	----
cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	<5	<5	----
1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	<5	<5	----
1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	<5	<5	----
Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	<5	<5	----
1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	<5	<5	----
Trichloroethene	79-01-6	5	µg/L	<5	<5	<5	<5	----
Dibromomethane	74-95-3	5	µg/L	<5	<5	<5	<5	----
1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	<5	<5	----
1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	<5	<5	----
Tetrachloroethene	127-18-4	5	µg/L	<5	<5	<5	<5	----
1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	<5	<5	----
trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	<5	<5	----
cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	<5	<5	----
1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	<5	<5	----
1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	<5	<5	----
Pentachloroethane	76-01-7	5	µg/L	<5	<5	<5	<5	----
1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	<5	<5	----
Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	<5	<5	----
EP074F: Halogenated Aromatic Compounds								
Chlorobenzene	108-90-7	5	µg/L	<5	<5	<5	<5	----
Bromobenzene	108-86-1	5	µg/L	<5	<5	<5	<5	----
2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	<5	<5	----
4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	<5	<5	----
1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	<5	<5	----
1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	<5	<5	----
1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	<5	<5	----
1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	<5	<5	----
1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	<5	<5	----
EP074G: Trihalomethanes								
Chloroform	67-66-3	5	µg/L	<5	<5	<5	<5	----
Bromodichloromethane	75-27-4	5	µg/L	<5	<5	<5	<5	----
Dibromochloromethane	124-48-1	5	µg/L	<5	<5	<5	<5	----
Bromoform	75-25-2	5	µg/L	<5	<5	<5	<5	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	MW103	QW01	SW01	SW02	RB1
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	18-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ES2313946-016	ES2313946-017	ES2313946-018	ES2313946-019	ES2313946-020
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	**200**	----
C15 - C28 Fraction	----	100	µg/L	**440**	<100	**200**	**1620**	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	**300**	**810**	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	**440**	<50	**500**	**2630**	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	**430**	----
>C16 - C34 Fraction	----	100	µg/L	**420**	<100	**420**	**1900**	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	**140**	**640**	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	**420**	<100	**560**	**2970**	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	**430**	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			*Sample ID*	**MW103**	**QW01**	**SW01**	**SW02**	**RB1**
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	18-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-016**	**ES2313946-017**	**ES2313946-018**	**ES2313946-019**	**ES2313946-020**
				Result	Result	Result	Result	Result
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----
EP231A: Perfluoroalkyl Sulfonic Acids								
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	**0.03**	<0.02	<0.02	<0.02	----
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	**0.11**	<0.01	**0.03**	**0.02**	----
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	<0.01	<0.01	**0.03**	----
EP231B: Perfluoroalkyl Carboxylic Acids								
Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	<0.1	<0.1	----
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	<0.02	<0.02	<0.02	----
Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	<0.01	<0.01	<0.01	----
EP231D: (n:2) Fluorotelomer Sulfonic Acids								
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05	µg/L	<0.05	<0.05	<0.05	<0.05	----
EP231P: PFAS Sums								
Sum of PFHxS and PFOS	355-46-4/1763-23-1	0.01	µg/L	**0.11**	<0.01	**0.03**	**0.05**	----
Sum of PFAS (WA DER List)	----	0.01	µg/L	**0.14**	<0.01	**0.03**	**0.05**	----
EP074S: VOC Surrogates								

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Sample ID	**MW103**	**QW01**	**SW01**	**SW02**	**RB1**
			Sampling date / time	27-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	27-Apr-2023 00:00	18-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	**ES2313946-016**	**ES2313946-017**	**ES2313946-018**	**ES2313946-019**	**ES2313946-020**
				Result	Result	Result	Result	Result
EP074S: VOC Surrogates - Continued								
1.2-Dichloroethane-D4	17060-07-0	5	%	**131**	**117**	**111**	**109**	----
Toluene-D8	2037-26-5	5	%	**125**	**112**	**107**	**102**	----
4-Bromofluorobenzene	460-00-4	5	%	**113**	**103**	**101**	**94.8**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	**16.6**	**19.5**	**16.4**	**16.1**	----
2-Chlorophenol-D4	93951-73-6	1.0	%	**38.3**	**44.0**	**40.3**	**38.1**	----
2.4.6-Tribromophenol	118-79-6	1.0	%	**60.9**	**54.4**	**49.2**	**60.2**	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	**51.6**	**59.1**	**53.0**	**52.2**	----
Anthracene-d10	1719-06-8	1.0	%	**73.2**	**74.7**	**66.0**	**67.0**	----
4-Terphenyl-d14	1718-51-0	1.0	%	**74.9**	**80.2**	**68.2**	**68.4**	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**140**	**126**	**119**	**117**	----
Toluene-D8	2037-26-5	2	%	**130**	**120**	**116**	**110**	----
4-Bromofluorobenzene	460-00-4	2	%	**123**	**108**	**106**	**100**	----
EP231S: PFAS Surrogate								
13C4-PFOS	----	0.02	%	**89.0**	**99.0**	**93.0**	**98.1**	----
13C8-PFOA	----	0.02	%	**100**	**100**	**101**	**98.2**	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Sample ID	**RB2**	**RB3**	**RB4**	**RB5**	**Trip blank**
			Sampling date / time	19-Apr-2023 00:00	20-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	17-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-021**	**ES2313946-022**	**ES2313946-023**	**ES2313946-024**	**ES2313946-025**
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	----	----	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	----	----	<50	<50	----
C15 - C28 Fraction	----	100	µg/L	----	----	<100	<100	----
C29 - C36 Fraction	----	50	µg/L	----	----	<50	<50	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L	----	----	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	----	----	<20	<20	<20
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L	----	----	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	----	----	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L	----	----	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L	----	----	<100	<100	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L	----	----	<100	<100	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L	----	----	<100	<100	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	----	----	<1	<1	<1
Toluene	108-88-3	2	µg/L	----	----	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	----	----	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	----	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	----	----	<2	<2	<2
^ **Total Xylenes**	----	2	µg/L	----	----	<2	<2	<2
^ **Sum of BTEX**	----	1	µg/L	----	----	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	----	----	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER**
(Matrix: **WATER**)

			Sample ID	**RB2**	**RB3**	**RB4**	**RB5**	**Trip blank**
			Sampling date / time	19-Apr-2023 00:00	20-Apr-2023 00:00	26-Apr-2023 00:00	27-Apr-2023 00:00	17-Apr-2023 00:00
Compound	*CAS Number*	*LOR*	*Unit*	**ES2313946-021**	**ES2313946-022**	**ES2313946-023**	**ES2313946-024**	**ES2313946-025**
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	----	----	**120**	**120**	**98.9**
Toluene-D8	2037-26-5	2	%	----	----	**114**	**111**	**112**
4-Bromofluorobenzene	460-00-4	2	%	----	----	**104**	**104**	**109**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	Trip spike	----	----	----	----
			Sampling date / time	17-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2313946-026	--------	--------	--------	--------
				Result	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	**19**	----	----	----	----
Toluene	108-88-3	2	µg/L	**18**	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	**18**	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	**18**	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	**19**	----	----	----	----
^ Total Xylenes	----	2	µg/L	**37**	----	----	----	----
^ Sum of BTEX	----	1	µg/L	**92**	----	----	----	----
Naphthalene	91-20-3	5	µg/L	**18**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**105**	----	----	----	----
Toluene-D8	2037-26-5	2	%	**114**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**117**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**

Compound	*CAS Number*	***Recovery Limits (%)***	
		Low	***High***
EP074S: VOC Surrogates			
1.2-Dichloroethane-D4	17060-07-0	78	133
Toluene-D8	2037-26-5	79	129
4-Bromofluorobenzene	460-00-4	81	124
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137
EP231S: PFAS Surrogate			
13C4-PFOS	----	60	120
13C8-PFOA	----	60	120

QUALITY CONTROL REPORT

Work Order : **ES2313946**

Client : **CAVVANBA CONSULTING**
Contact : MR DREW WOOD
Address : PO Box 322
NEWCASTLE 2300
Telephone : +61 02 6685 7811
Project : 20025.75
Order number : ----
C-O-C number : ----
Sampler : ZAC LAUGHLAN
Site : ----
Quote number : SY/159/20
No. of samples received : 26
No. of samples analysed : 26

Page : 1 of 19

Laboratory : Environmental Division Sydney
Contact : Karen Coveny
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 28-Apr-2023
Date Analysis Commenced : 29-Apr-2023
Issue Date : 05-May-2023

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

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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5018872)									
ES2313946-009	MW07	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	67	66	0.0	0% - 20%
ES2313742-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	0.0	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 5019040)									
ES2314050-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	152	154	1.5	0% - 20%
ES2313761-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	37	37	0.0	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5023596)									
ES2313946-001	W2	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.026	0.026	0.0	0% - 20%
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ES2313946-012	MW12	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	0.005	0.005	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5023621)									

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG020F: Dissolved Metals by ICP-MS (QC Lot: 5023621) - continued									
ES2313946-008	MW06	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.975	0.983	0.8	0% - 20%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.006	0.006	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ES2313915-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.421	0.406	3.6	0% - 20%
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.040	0.041	2.8	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 5022387)									
ES2313560-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.003	0.004	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
ES2313946-019	SW02	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0008	0.0008	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.038	0.038	0.0	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.014	0.014	0.0	0% - 50%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.683	0.699	2.2	0% - 20%
EG035F: Dissolved Mercury by FIMS (QC Lot: 5023597)									
ES2313946-002	W3	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2313946-011	MW10	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 5023622)									
ES2313933-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2314036-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5020775)									
EM2307309-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	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 (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 5020775) - continued									
EM2307309-011	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 5025736)									
ES2313946-001	W2	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	0.03	0.03	0.0	No Limit
ES2313946-011	MW10	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG050F: Dissolved Hexavalent Chromium (QC Lot: 5029446)									
ES2313946-002	W3	EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	0.01	0.02	0.0	No Limit
EG051G: Ferrous Iron by Discrete Analyser (QC Lot: 5020033)									
ES2313888-001	Anonymous	EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	0.0	No Limit
ES2313946-009	MW07	EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EP033: C1 - C4 Hydrocarbon Gases (QC Lot: 5020136)									
ES2313946-003	MW01	EP033: Methane	74-82-8	10	µg/L	<10	<10	0.0	No Limit
ES2313946-014	MW101	EP033: Methane	74-82-8	10	µg/L	<10	<10	0.0	No Limit
EP074A: Monocyclic Aromatic Hydrocarbons (QC Lot: 5021462)									
ES2313946-001	W2	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
ES2313946-012	MW12	EP074: Styrene	100-42-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	<5	0.0	No Limit
EP074B: Oxygenated Compounds (QC Lot: 5021462)									
ES2313946-001	W2	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
ES2313946-012	MW12	EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	<50	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 (%)*
EP074B: Oxygenated Compounds (QC Lot: 5021462) - continued									
ES2313946-012	MW12	EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	<50	0.0	No Limit
EP074C: Sulfonated Compounds (QC Lot: 5021462)									
ES2313946-001	W2	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
ES2313946-012	MW12	EP074: Carbon disulfide	75-15-0	5	µg/L	<5	<5	0.0	No Limit
EP074D: Fumigants (QC Lot: 5021462)									
ES2313946-001	W2	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
ES2313946-012	MW12	EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	<5	0.0	No Limit
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5021462)									
ES2313946-001	W2	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	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 (%)*
EP074E: Halogenated Aliphatic Compounds (QC Lot: 5021462) - continued									
ES2313946-001	W2	EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
ES2313946-012	MW12	EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Iodomethane	74-88-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	<5	0.0	No Limit
		EP074: Trichloroethene	79-01-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromomethane	74-95-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	<5	0.0	No Limit
		EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	<5	0.0	No Limit
		EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Pentachloroethane	76-01-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloromethane	74-87-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Vinyl chloride	75-01-4	50	µg/L	<50	<50	0.0	No Limit
		EP074: Bromomethane	74-83-9	50	µg/L	<50	<50	0.0	No Limit
		EP074: Chloroethane	75-00-3	50	µg/L	<50	<50	0.0	No Limit
		EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	<50	0.0	No Limit
EP074F: Halogenated Aromatic Compounds (QC Lot: 5021462)									
ES2313946-001	W2	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP074F: Halogenated Aromatic Compounds (QC Lot: 5021462) - continued									
ES2313946-001	W2	EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
ES2313946-012	MW12	EP074: Chlorobenzene	108-90-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromobenzene	108-86-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	<5	0.0	No Limit
		EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	<5	0.0	No Limit
EP074G: Trihalomethanes (QC Lot: 5021462)									
ES2313946-001	W2	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
ES2313946-012	MW12	EP074: Chloroform	67-66-3	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	<5	0.0	No Limit
		EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	<5	0.0	No Limit
		EP074: Bromoform	75-25-2	5	µg/L	<5	<5	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 5019356)									
ES2313946-006	MW04	EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	<1.0	0.0	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	<1.0	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5019357)									
ES2313946-006	MW04	EP071: C15 - C28 Fraction	----	100	µg/L	<100	<100	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5019357) - continued									
ES2313946-006	MW04	EP071: C10 - C14 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5019754)									
ES2313571-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2314022-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 5021461)									
ES2313946-001	W2	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2313946-012	MW12	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5019357)									
ES2313946-006	MW04	EP071: >C10 - C16 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5019754)									
ES2313571-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2314022-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 5021461)									
ES2313946-001	W2	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2313946-012	MW12	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 5019754)									
ES2313571-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2314022-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP080: BTEXN (QC Lot: 5021461)									
ES2313946-001	W2	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP080: BTEXN (QC Lot: 5021461) - continued									
ES2313946-001	W2	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
ES2313946-012	MW12	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EP231A: Perfluoroalkyl Sulfonic Acids (QC Lot: 5025829)									
ES2313946-001	W2	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
ES2314000-001	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	0.02	0.0	No Limit
		EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	<0.02	0.0	No Limit
EP231B: Perfluoroalkyl Carboxylic Acids (QC Lot: 5025829)									
ES2313946-001	W2	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: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
ES2314000-001	Anonymous	EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	0.02	0.02	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: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	<0.1	0.0	No Limit
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5025829)									
ES2313946-001	W2	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
ES2314000-001	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

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QC Lot: 5025829) - continued									
ES2314000-001	Anonymous	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

Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5018872)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	99.6	82.0	122
				<1	500 mg/L	94.2	82.0	122
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5019040)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	103	82.0	122
				<1	500 mg/L	99.0	82.0	122
EG020F: Dissolved Metals by ICP-MS (QCLot: 5023596)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	92.0	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	88.6	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	87.0	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.1	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	90.1	83.0	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	88.3	82.0	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	88.7	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	91.2	81.0	117
EG020F: Dissolved Metals by ICP-MS (QCLot: 5023621)								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	94.5	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.2	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.7	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.9	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.1	83.0	111
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	93.6	82.0	110
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	92.6	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	95.0	81.0	117
EG020T: Total Metals by ICP-MS (QCLot: 5022387)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	93.4	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	91.8	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	89.7	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	92.8	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	92.3	85.0	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	90.8	84.0	116

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*	*Concentration*	*LCS*	*Low*	*High*
EG020T: Total Metals by ICP-MS (QCLot: 5022387) - continued								
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	93.2	79.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 5023597)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.8	83.0	105
EG035F: Dissolved Mercury by FIMS (QCLot: 5023622)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.3	83.0	105
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5020775)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	94.8	77.0	111
EG050F: Dissolved Hexavalent Chromium (QCLot: 5025736)								
EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.05 mg/L	100	86.0	112
EG050F: Dissolved Hexavalent Chromium (QCLot: 5029446)								
EG050G-F: Hexavalent Chromium	18540-29-9	0.01	mg/L	<0.01	0.05 mg/L	103	86.0	112
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 5020033)								
EG051G: Ferrous Iron	----	0.05	mg/L	<0.05	2 mg/L	96.6	89.0	117
EP033: C1 - C4 Hydrocarbon Gases (QCLot: 5020136)								
EP033: Methane	74-82-8	10	µg/L	<10	28.48 µg/L	94.8	86.0	114
EP074A: Monocyclic Aromatic Hydrocarbons (QCLot: 5021462)								
EP074: Styrene	100-42-5	5	µg/L	<5	10 µg/L	93.4	73.0	119
EP074: Isopropylbenzene	98-82-8	5	µg/L	<5	10 µg/L	91.5	76.0	118
EP074: n-Propylbenzene	103-65-1	5	µg/L	<5	10 µg/L	80.3	69.0	119
EP074: 1.3.5-Trimethylbenzene	108-67-8	5	µg/L	<5	10 µg/L	88.8	74.0	116
EP074: sec-Butylbenzene	135-98-8	5	µg/L	<5	10 µg/L	82.7	73.0	119
EP074: 1.2.4-Trimethylbenzene	95-63-6	5	µg/L	<5	10 µg/L	92.0	74.0	116
EP074: tert-Butylbenzene	98-06-6	5	µg/L	<5	10 µg/L	83.7	72.0	116
EP074: p-Isopropyltoluene	99-87-6	5	µg/L	<5	10 µg/L	84.4	71.0	119
EP074: n-Butylbenzene	104-51-8	5	µg/L	<5	10 µg/L	83.4	65.0	123
EP074B: Oxygenated Compounds (QCLot: 5021462)								
EP074: Vinyl Acetate	108-05-4	50	µg/L	<50	100 µg/L	99.6	61.4	134
EP074: 2-Butanone (MEK)	78-93-3	50	µg/L	<50	100 µg/L	88.5	73.6	130
EP074: 4-Methyl-2-pentanone (MIBK)	108-10-1	50	µg/L	<50	100 µg/L	114	66.0	132
EP074: 2-Hexanone (MBK)	591-78-6	50	µg/L	<50	100 µg/L	96.6	65.0	137
EP074C: Sulfonated Compounds (QCLot: 5021462)								
EP074: Carbon disulfide	75-15-0	5	µg/L	<5	10 µg/L	74.7	72.8	127
EP074D: Fumigants (QCLot: 5021462)								
EP074: 2.2-Dichloropropane	594-20-7	5	µg/L	<5	10 µg/L	83.2	68.0	122

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*	*Concentration*	*LCS*	*Low*	*High*
EP074D: Fumigants (QCLot: 5021462) - continued								
EP074: 1.2-Dichloropropane	78-87-5	5	µg/L	<5	10 µg/L	94.7	76.0	118
EP074: cis-1.3-Dichloropropylene	10061-01-5	5	µg/L	<5	10 µg/L	94.9	62.0	120
EP074: trans-1.3-Dichloropropylene	10061-02-6	5	µg/L	<5	10 µg/L	99.3	60.0	114
EP074: 1.2-Dibromoethane (EDB)	106-93-4	5	µg/L	<5	10 µg/L	114	69.0	117
EP074E: Halogenated Aliphatic Compounds (QCLot: 5021462)								
EP074: Dichlorodifluoromethane	75-71-8	50	µg/L	<50	100 µg/L	83.1	60.6	138
EP074: Chloromethane	74-87-3	50	µg/L	<50	100 µg/L	81.2	67.4	130
EP074: Vinyl chloride	75-01-4	50	µg/L	<50	100 µg/L	76.9	69.4	129
EP074: Bromomethane	74-83-9	50	µg/L	<50	100 µg/L	77.3	56.0	140
EP074: Chloroethane	75-00-3	50	µg/L	<50	100 µg/L	72.8	61.0	139
EP074: Trichlorofluoromethane	75-69-4	50	µg/L	<50	100 µg/L	72.8	69.0	131
EP074: 1.1-Dichloroethene	75-35-4	5	µg/L	<5	10 µg/L	79.5	70.0	124
EP074: Iodomethane	74-88-4	5	µg/L	<5	10 µg/L	72.4	70.2	128
EP074: trans-1.2-Dichloroethene	156-60-5	5	µg/L	<5	10 µg/L	87.6	74.0	118
EP074: 1.1-Dichloroethane	75-34-3	5	µg/L	<5	10 µg/L	84.4	74.0	120
EP074: cis-1.2-Dichloroethene	156-59-2	5	µg/L	<5	10 µg/L	89.7	77.0	119
EP074: 1.1.1-Trichloroethane	71-55-6	5	µg/L	<5	10 µg/L	82.9	67.0	119
EP074: 1.1-Dichloropropylene	563-58-6	5	µg/L	<5	10 µg/L	86.3	73.0	119
EP074: Carbon Tetrachloride	56-23-5	5	µg/L	<5	10 µg/L	80.2	62.0	120
EP074: 1.2-Dichloroethane	107-06-2	5	µg/L	<5	10 µg/L	90.0	73.0	123
EP074: Trichloroethene	79-01-6	5	µg/L	<5	10 µg/L	93.3	76.0	118
EP074: Dibromomethane	74-95-3	5	µg/L	<5	10 µg/L	97.6	73.0	119
EP074: 1.1.2-Trichloroethane	79-00-5	5	µg/L	<5	10 µg/L	110	72.0	126
EP074: 1.3-Dichloropropane	142-28-9	5	µg/L	<5	10 µg/L	108	71.0	129
EP074: Tetrachloroethene	127-18-4	5	µg/L	<5	10 µg/L	95.2	72.0	124
EP074: 1.1.1.2-Tetrachloroethane	630-20-6	5	µg/L	<5	10 µg/L	99.1	66.0	114
EP074: trans-1.4-Dichloro-2-butene	110-57-6	5	µg/L	<5	10 µg/L	105	60.0	120
EP074: cis-1.4-Dichloro-2-butene	1476-11-5	5	µg/L	<5	10 µg/L	107	70.6	128
EP074: 1.1.2.2-Tetrachloroethane	79-34-5	5	µg/L	<5	10 µg/L	118	70.0	124
EP074: 1.2.3-Trichloropropane	96-18-4	5	µg/L	<5	10 µg/L	117	74.0	126
EP074: Pentachloroethane	76-01-7	5	µg/L	<5	10 µg/L	88.9	71.8	126
EP074: 1.2-Dibromo-3-chloropropane	96-12-8	5	µg/L	<5	10 µg/L	82.5	66.4	136
EP074: Hexachlorobutadiene	87-68-3	5	µg/L	<5	10 µg/L	72.6	58.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5021462)								

Sub-Matrix: **WATER**

				Method Blank (MB) Report	*Laboratory Control Spike (LCS) Report*			
					Spike	*Spike Recovery (%)*	*Acceptable Limits (%)*	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*	*Concentration*	*LCS*	*Low*	*High*
EP074F: Halogenated Aromatic Compounds (QCLot: 5021462) - continued								
EP074: Chlorobenzene	108-90-7	5	µg/L	<5	10 µg/L	99.5	79.0	117
EP074: Bromobenzene	108-86-1	5	µg/L	<5	10 µg/L	92.7	76.0	116
EP074: 2-Chlorotoluene	95-49-8	5	µg/L	<5	10 µg/L	83.2	73.0	119
EP074: 4-Chlorotoluene	106-43-4	5	µg/L	<5	10 µg/L	82.6	73.0	119
EP074: 1.3-Dichlorobenzene	541-73-1	5	µg/L	<5	10 µg/L	90.5	75.0	117
EP074: 1.4-Dichlorobenzene	106-46-7	5	µg/L	<5	10 µg/L	90.0	74.0	118
EP074: 1.2-Dichlorobenzene	95-50-1	5	µg/L	<5	10 µg/L	90.6	75.0	117
EP074: 1.2.4-Trichlorobenzene	120-82-1	5	µg/L	<5	10 µg/L	80.1	61.0	125
EP074: 1.2.3-Trichlorobenzene	87-61-6	5	µg/L	<5	10 µg/L	88.6	67.0	123
EP074G: Trihalomethanes (QCLot: 5021462)								
EP074: Chloroform	67-66-3	5	µg/L	<5	10 µg/L	96.9	72.0	120
EP074: Bromodichloromethane	75-27-4	5	µg/L	<5	10 µg/L	88.7	64.0	118
EP074: Dibromochloromethane	124-48-1	5	µg/L	<5	10 µg/L	97.2	65.0	115
EP074: Bromoform	75-25-2	5	µg/L	<5	10 µg/L	102	73.5	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5019356)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	57.8	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	68.9	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	74.8	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	80.0	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	76.3	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	66.9	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	80.6	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	81.0	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	78.5	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	80.2	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L	<1.0	5 µg/L	79.8	61.7	119
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	83.5	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	74.0	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	84.0	59.9	118
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	83.0	61.2	117
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	86.8	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5019357)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	69.4	53.7	97.0

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	*CAS Number*	*LOR*	*Unit*	*Result*	*Concentration*	*LCS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5019357) - continued								
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	83.2	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	102	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5019754)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	79.3	75.0	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5021461)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	106	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5019357)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	68.4	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	77.7	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	97.1	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5019754)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	84.5	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5021461)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	106	75.0	127
EP080: BTEXN (QCLot: 5019754)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	84.8	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	94.6	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	98.6	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	98.0	73.0	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	98.0	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	86.4	75.5	124
EP080: BTEXN (QCLot: 5021461)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	106	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	103	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	107	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	107	73.0	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	109	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	105	75.5	124
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5025829)								
EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02	µg/L	<0.02	0.25 µg/L	90.2	72.0	130
EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.01	µg/L	<0.01	0.25 µg/L	98.6	68.0	131
EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01	µg/L	<0.01	0.25 µg/L	105	65.0	140
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5025829)								

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5025829) - continued								
EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	0.1	µg/L	<0.1	1.25 µg/L	99.8	73.0	129
EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	129
EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.02	µg/L	<0.02	0.25 µg/L	103	72.0	129
EP231X: Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02	µg/L	<0.02	0.25 µg/L	105	72.0	130
EP231X: Perfluorooctanoic acid (PFOA)	335-67-1	0.01	µg/L	<0.01	0.25 µg/L	116	71.0	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5025829)								
EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05	µg/L	<0.05	0.25 µg/L	110	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	116	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	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	105	71.4	144

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5018872)							
ES2313742-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	106	70.0	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 5019040)							
ES2313761-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	70.0	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5023596)							
ES2313946-004	MW02	EG020A-F: Arsenic	7440-38-2	1 mg/L	97.5	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	92.4	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	90.9	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	93.7	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	89.2	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	88.4	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	92.4	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	94.4	70.0	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 5023621)							
ES2313915-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	111	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	112	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	107	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	109	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 5023621) - continued							
ES2313915-002	Anonymous	EG020A-F: Lead	7439-92-1	1 mg/L	105	70.0	130
		EG020A-F: Manganese	7439-96-5	1 mg/L	114	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	109	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	110	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 5022387)							
ES2313743-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	101	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	103	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	100	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	102	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	98.3	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.6	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	100	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 5023597)							
ES2313946-003	MW01	EG035F: Mercury	7439-97-6	0.01 mg/L	79.1	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 5023622)							
ES2313933-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	95.0	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 5020775)							
EM2307309-002	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	91.3	70.0	130
EG050F: Dissolved Hexavalent Chromium (QCLot: 5025736)							
ES2313946-001	W2	EG050G-F: Hexavalent Chromium	18540-29-9	0.5 mg/L	# 9.0	70.0	130
EG050F: Dissolved Hexavalent Chromium (QCLot: 5029446)							
ES2313946-002	W3	EG050G-F: Hexavalent Chromium	18540-29-9	0.05 mg/L	99.4	70.0	130
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 5020033)							
ES2313888-001	Anonymous	EG051G: Ferrous Iron	----	1 mg/L	99.1	70.0	130
EP033: C1 - C4 Hydrocarbon Gases (QCLot: 5020136)							
ES2313946-004	MW02	EP033: Methane	74-82-8	28.48 µg/L	# Not Determined	70.0	130
EP074E: Halogenated Aliphatic Compounds (QCLot: 5021462)							
ES2313946-001	W2	EP074: 1.1-Dichloroethene	75-35-4	25 µg/L	75.1	70.0	130
		EP074: Trichloroethene	79-01-6	25 µg/L	86.7	70.0	130
EP074F: Halogenated Aromatic Compounds (QCLot: 5021462)							
ES2313946-001	W2	EP074: Chlorobenzene	108-90-7	25 µg/L	89.4	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 5019356)							
ES2313946-006	MW04	EP075(SIM): Acenaphthene	83-32-9	20 µg/L	73.2	70.0	130
		EP075(SIM): Pyrene	129-00-0	20 µg/L	72.9	70.0	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5019357)							
ES2313946-006	MW04	EP071: C10 - C14 Fraction	----	200 µg/L	117	70.0	130
		EP071: C15 - C28 Fraction	----	250 µg/L	97.8	71.0	130
		EP071: C29 - C36 Fraction	----	200 µg/L	119	67.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5019754)							
ES2313571-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	86.0	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 5021461)							
ES2313946-001	W2	EP080: C6 - C9 Fraction	----	325 µg/L	125	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5019357)							
ES2313946-006	MW04	EP071: >C10 - C16 Fraction	----	250 µg/L	111	70.0	130
		EP071: >C16 - C34 Fraction	----	350 µg/L	104	75.0	130
		EP071: >C34 - C40 Fraction	----	150 µg/L	112	67.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5019754)							
ES2313571-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	86.7	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 5021461)							
ES2313946-001	W2	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	130	70.0	130
EP080: BTEXN (QCLot: 5019754)							
ES2313571-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	84.7	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	95.5	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	96.2	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	96.0	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	94.6	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	81.9	70.0	130
EP080: BTEXN (QCLot: 5021461)							
ES2313946-001	W2	EP080: Benzene	71-43-2	25 µg/L	119	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	113	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	108	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	25 µg/L	105	70.0	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	108	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	97.3	70.0	130
EP231A: Perfluoroalkyl Sulfonic Acids (QCLot: 5025829)							
ES2313946-001	W2	EP231X: Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.25 µg/L	93.4	72.0	130
		EP231X: Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.25 µg/L	94.8	68.0	131
		EP231X: Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.25 µg/L	104	65.0	140
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5025829)							

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	*SpikeRecovery(%)*	*Acceptable Limits (%)*	
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP231B: Perfluoroalkyl Carboxylic Acids (QCLot: 5025829) - continued							
ES2313946-001	W2	EP231X: Perfluorobutanoic acid (PFBA)	375-22-4	1.25 µg/L	101	73.0	129
		EP231X: Perfluoropentanoic acid (PFPeA)	2706-90-3	0.25 µg/L	104	72.0	129
		EP231X: Perfluorohexanoic acid (PFHxA)	307-24-4	0.25 µg/L	102	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	115	71.0	133
EP231D: (n:2) Fluorotelomer Sulfonic Acids (QCLot: 5025829)							
ES2313946-001	W2	EP231X: 4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.25 µg/L	97.4	63.0	143
		EP231X: 6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.25 µg/L	105	64.0	140
		EP231X: 8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.25 µg/L	114	67.0	138
		EP231X: 10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.25 µg/L	110	71.4	144

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2313946**	Page	: 1 of 16
Client	: **CAVVANBA CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: MR DREW WOOD	Telephone	: +61-2-8784 8555
Project	: 20025.75	Date Samples Received	: 28-Apr-2023
Site	: ----	Issue Date	: 05-May-2023
Sampler	: ZAC LAUGHLAN	No. of samples received	: 26
Order number	: ----	No. of samples analysed	: 26

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EG050F: Dissolved Hexavalent Chromium	ES2313946--001	W2	**Hexavalent Chromium**	18540-29-9	9.0 %	70.0-130%	**Recovery less than lower data quality objective**
EP033: C1 - C4 Hydrocarbon Gases	ES2313946--004	MW02	**Methane**	74-82-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

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)					
PAH/Phenols (GC/MS - SIM)	1	18	5.56	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	1	20	5.00	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: **WATER**

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

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
***Container** / Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) MW02, MW04, MW05, MW07, MW09, MW12, MW13	**26-Apr-2023**	**----**	----	----	**01-May-2023**	24-May-2023	✓
Clear Plastic Bottle - Natural (ED041G) MW01, MW06, MW10, MW101	**27-Apr-2023**	**----**	----	----	**01-May-2023**	25-May-2023	✓
Clear Plastic Bottle - Natural (ED041G) MW102, MW103	**27-Apr-2023**	**----**	----	----	**29-Apr-2023**	25-May-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*
ED093F: SAR and Hardness Calculations							
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13	**26-Apr-2023**	**----**	----	----	**03-May-2023**	24-May-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (ED093F) W2, W3, MW01, MW10, MW101, MW102, MW103	**27-Apr-2023**	**----**	----	----	**03-May-2023**	25-May-2023	✓
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**----**	----	----	**03-May-2023**	23-Oct-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) W2, W3, MW01, MW06, MW10, MW101, MW102, MW103	**27-Apr-2023**	**----**	----	----	**03-May-2023**	24-Oct-2023	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) RB1	**18-Apr-2023**	**02-May-2023**	15-Oct-2023	✓	**02-May-2023**	15-Oct-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) RB2	**19-Apr-2023**	**02-May-2023**	16-Oct-2023	✓	**02-May-2023**	16-Oct-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) RB3	**20-Apr-2023**	**02-May-2023**	17-Oct-2023	✓	**02-May-2023**	17-Oct-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) RB4	**26-Apr-2023**	**02-May-2023**	23-Oct-2023	✓	**02-May-2023**	23-Oct-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) SW01, SW02, RB5	**27-Apr-2023**	**02-May-2023**	24-Oct-2023	✓	**02-May-2023**	24-Oct-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*
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**----**	----	----	**04-May-2023**	24-May-2023	✓
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) W2, W3, MW01, MW10, MW101, MW102, MW103	**27-Apr-2023**	**----**	----	----	**04-May-2023**	25-May-2023	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) RB1	**18-Apr-2023**	**----**	----	----	**03-May-2023**	16-May-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) RB2	**19-Apr-2023**	**----**	----	----	**03-May-2023**	17-May-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) RB3	**20-Apr-2023**	**----**	----	----	**03-May-2023**	18-May-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) RB4	**26-Apr-2023**	**----**	----	----	**03-May-2023**	24-May-2023	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) SW01, SW02, RB5	**27-Apr-2023**	**----**	----	----	**03-May-2023**	25-May-2023	✓
EG050F: Dissolved Hexavalent Chromium							
Clear Plastic Bottle - NaOH Filtered (EG050G-F) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13	**26-Apr-2023**	**----**	----	----	**03-May-2023**	24-May-2023	✓
Clear Plastic Bottle - NaOH Filtered (EG050G-F) W2, W3, MW01, MW10, MW101, MW102, MW103	**27-Apr-2023**	**----**	----	----	**03-May-2023**	25-May-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*
EG051G: Ferrous Iron by Discrete Analyser							
Clear Plastic Bottle - HCl - Filtered (EG051G) MW02, MW04, MW05, MW07, MW09, MW12, MW13	**26-Apr-2023**	**----**	----	----	**02-May-2023**	03-May-2023	✓
Clear Plastic Bottle - HCl - Filtered (EG051G) MW01, MW06, MW10, MW101, MW102, MW103	**27-Apr-2023**	**----**	----	----	**02-May-2023**	04-May-2023	✓
EP033: C1 - C4 Hydrocarbon Gases							
Amber VOC Vial - Sulfuric Acid (EP033) MW02, MW04, MW05, MW07, MW09, MW12, MW13	**26-Apr-2023**	**----**	----	----	**01-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP033) MW01, MW06, MW10, MW102, MW103	**27-Apr-2023**	**----**	----	----	**01-May-2023**	11-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP033) MW101	**27-Apr-2023**	**----**	----	----	**02-May-2023**	11-May-2023	✓
EP074A: Monocyclic Aromatic Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP074) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓

Matrix: **WATER**

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

Method	***Sample Date***	*Extraction / Preparation*			*Analysis*		
Container */ Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP074B: Oxygenated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓
EP074C: Sulfonated Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓
EP074D: Fumigants							
Amber VOC Vial - Sulfuric Acid (EP074) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓

Matrix: **WATER**

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

Method ***Container** / Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation* ***Date extracted***	 *Due for extraction*	 *Evaluation*	*Analysis* ***Date analysed***	 *Due for analysis*	 *Evaluation*
EP074E: Halogenated Aliphatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓
EP074F: Halogenated Aromatic Compounds							
Amber VOC Vial - Sulfuric Acid (EP074) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓
EP074G: Trihalomethanes							
Amber VOC Vial - Sulfuric Acid (EP074) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP074) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓

Matrix: **WATER**

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

Method	*Sample Date*	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	*Evaluation*	*Date analysed*	*Due for analysis*	*Evaluation*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13	**26-Apr-2023**	**02-May-2023**	03-May-2023	✓	**04-May-2023**	11-Jun-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) QW01	**26-Apr-2023**	**02-May-2023**	03-May-2023	✓	**05-May-2023**	11-Jun-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) W2, W3, MW01, MW10, MW101, MW102	**27-Apr-2023**	**02-May-2023**	04-May-2023	✓	**04-May-2023**	11-Jun-2023	✓
Amber Glass Bottle - Unpreserved (EP075(SIM)) MW103, SW01, SW02	**27-Apr-2023**	**02-May-2023**	04-May-2023	✓	**05-May-2023**	11-Jun-2023	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01, RB4	**26-Apr-2023**	**02-May-2023**	03-May-2023	✓	**04-May-2023**	11-Jun-2023	✓
Amber Glass Bottle - Unpreserved (EP071) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02, RB5	**27-Apr-2023**	**02-May-2023**	04-May-2023	✓	**04-May-2023**	11-Jun-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) Trip blank	**17-Apr-2023**	**01-May-2023**	01-May-2023	✓	**01-May-2023**	01-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01, RB4	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02, RB5	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓

Matrix: **WATER**

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

Method	Sample Date	*Extraction / Preparation*			*Analysis*		
***Container** / Client Sample ID(s)*		***Date extracted***	*Due for extraction*	*Evaluation*	***Date analysed***	*Due for analysis*	*Evaluation*
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01, RB4	**26-Apr-2023**	**02-May-2023**	03-May-2023	✓	**04-May-2023**	11-Jun-2023	✓
Amber Glass Bottle - Unpreserved (EP071) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02, RB5	**27-Apr-2023**	**02-May-2023**	04-May-2023	✓	**04-May-2023**	11-Jun-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) Trip blank	**17-Apr-2023**	**01-May-2023**	01-May-2023	✓	**01-May-2023**	01-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01, RB4	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02, RB5	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) Trip blank, Trip spike	**17-Apr-2023**	**01-May-2023**	01-May-2023	✓	**01-May-2023**	01-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01, RB4	**26-Apr-2023**	**04-May-2023**	10-May-2023	✓	**04-May-2023**	10-May-2023	✓
Amber VOC Vial - Sulfuric Acid (EP080) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02, RB5	**27-Apr-2023**	**04-May-2023**	11-May-2023	✓	**04-May-2023**	11-May-2023	✓

Matrix: **WATER**

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

Method ***Container*** */ Client Sample ID(s)*	***Sample Date***	*Extraction / Preparation* ***Date extracted***	 *Due for extraction*	 *Evaluation*	*Analysis* ***Date analysed***	 *Due for analysis*	 *Evaluation*
EP231A: Perfluoroalkyl Sulfonic Acids							
HDPE (no PTFE) (EP231X) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	23-Oct-2023	✓	**05-May-2023**	23-Oct-2023	✓
HDPE (no PTFE) (EP231X) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	24-Oct-2023	✓	**05-May-2023**	24-Oct-2023	✓
EP231B: Perfluoroalkyl Carboxylic Acids							
HDPE (no PTFE) (EP231X) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	23-Oct-2023	✓	**05-May-2023**	23-Oct-2023	✓
HDPE (no PTFE) (EP231X) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	24-Oct-2023	✓	**05-May-2023**	24-Oct-2023	✓
EP231D: (n:2) Fluorotelomer Sulfonic Acids							
HDPE (no PTFE) (EP231X) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	23-Oct-2023	✓	**05-May-2023**	23-Oct-2023	✓
HDPE (no PTFE) (EP231X) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	24-Oct-2023	✓	**05-May-2023**	24-Oct-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*
EP231P: PFAS Sums							
HDPE (no PTFE) (EP231X) MW02, MW03, MW04, MW05, MW07, MW09, MW12, MW13, QW01	**26-Apr-2023**	**04-May-2023**	23-Oct-2023	✓	**05-May-2023**	23-Oct-2023	✓
HDPE (no PTFE) (EP231X) W2, W3, MW01, MW10, MW101, MW102, MW103, SW01, SW02	**27-Apr-2023**	**04-May-2023**	24-Oct-2023	✓	**05-May-2023**	24-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: **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)							
C1 - C4 Gases	EP033	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	4	36	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	4	36	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	3	24	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	**5.56**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
C1 - C4 Gases	EP033	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
C1 - C4 Gases	EP033	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
C1 - C4 Gases	EP033	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	36	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Ferrous Iron by Discrete Analyser	EG051G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	2	24	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Volatile Organic Compounds	EP074	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM Schedule B(3)
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Trivalent Chromium - Dissolved	EG049G-F	WATER	In house: Referenced to APHA 3500 Cr-B & 3120/3125. Trivalent Chromium is the difference between total dissolved and dissolved hexavalent chromium.
Hexavalent Chromium by Discrete Analyser - Dissolved	EG050G-F	WATER	In house: Referenced to APHA 3500 Cr-A & B. Samples are 0.45µm filtered prior to analysis. Hexavalent chromium is determined directly on water sample by Descrete Analyser as received by pH adjustment and colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).
Ferrous Iron by Discrete Analyser	EG051G	WATER	In house: Referenced to APHA 3500 Fe-B. A colorimetric determination based on the reaction between phenanthroline and ferrous iron at pH 3.2-3.3 to form an orange-red complex that is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3).

Analytical Methods	*Method*	*Matrix*	*Method Descriptions*
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM Schedule B(3)
C1 - C4 Gases	EP033	WATER	Technical Guidance for the Natural Attenuation Indicators: Methane, Ethane, and Ethene, US EPA - Region 1, EPA New England, July 2001. Automated static headspace, dual column GC/FID. A 12 mL sample is pipetted into a 20 mL headspace vial containing 3g of sodium chloride and sealed. Each sample is equilibrated with shaking at 40 degrees C for 10 minutes prior to analysis by GC/FID using a pair of PLOT columns of different polarity.
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
Volatile Organic Compounds	EP074	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS	EP231X	WATER	In-house: Analysis of fresh and saline waters by Solid Phase Extraction (SPE) followed by LC-Electrospray-MS-MS, Negative Mode using MRM and internal standard quantitation. Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures and data quality objectives conform to US DoD QSM 5.3, table B-15 requirements.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

Preparation Methods	*Method*	*Matrix*	*Method Descriptions*
Solid Phase Extraction (SPE) for PFAS in water	ORG72	WATER	In-house: Isotopically labelled analogues of target analytes used as internal standards and surrogates are added to the sample container. The entire contents are transferred to a solid phase extraction (SPE) cartridge. The sample container is successively rinsed with aliquots of the elution solvent. The eluted extract is combined with an equal volume of reagent water and a portion is filtered for analysis. Method procedures conform to US DoD QSM 5.3, table B-15 requirements.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2313946**

Client	: **CAVVANBA CONSULTING**	Laboratory	: Environmental Division Sydney
Contact	: MR DREW WOOD	Contact	: Karen Coveny
Address	: PO Box 322 NEWCASTLE 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: drew@cavvanba.com	E-mail	: karen.coveny@alsglobal.com
Telephone	: +61 02 6685 7811	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 6685 5083	Facsimile	: +61-2-8784 8500
Project	: 20025.75	Page	: 1 of 3
Order number	: ----	Quote number	: ES2020CAVCON0008 (SY/159/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: ZAC LAUGHLAN		

Dates

Date Samples Received	: 28-Apr-2023 11:29	Issue Date	: 28-Apr-2023
Client Requested Due Date	: 05-May-2023	Scheduled Reporting Date	: **05-May-2023**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 4	Temperature	: 3.2'c - Ice present
Receipt Detail	:	No. of samples received / analysed	: 26 / 26

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample QW02 to be forwarded to Eurofins as per COC's.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

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

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

Summary of Sample(s) and Requested Analysis

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

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EA065 (only) Total Hardness	WATER - EG049G-F Dissolved Trivalent Chromium by ICP & DA	WATER - EG050G-F Dissolved Hexavalent Chromium	WATER - EP231 PFAS - Short Suite (12 analytes)	WATER - W-02 8 Metals	WATER - W-10 TRH/BTEX/VOC/PAH	WATER - W-28 & Mn Natural Attenuation Indicators - including Mn
ES2313946-001	27-Apr-2023 00:00	W2	✓	✓	✓	✓	✓	✓	
ES2313946-002	27-Apr-2023 00:00	W3	✓	✓	✓	✓	✓	✓	
ES2313946-003	27-Apr-2023 00:00	MW01	✓	✓	✓	✓	✓	✓	✓
ES2313946-004	26-Apr-2023 00:00	MW02	✓	✓	✓	✓	✓	✓	✓
ES2313946-005	26-Apr-2023 00:00	MW03	✓	✓	✓	✓	✓	✓	
ES2313946-006	26-Apr-2023 00:00	MW04	✓	✓	✓	✓	✓	✓	✓
ES2313946-007	26-Apr-2023 00:00	MW05	✓	✓	✓	✓	✓	✓	✓
ES2313946-008	27-Apr-2023 00:00	MW06							✓
ES2313946-009	26-Apr-2023 00:00	MW07	✓	✓	✓	✓	✓	✓	✓
ES2313946-010	26-Apr-2023 00:00	MW09	✓	✓	✓	✓	✓	✓	✓
ES2313946-011	27-Apr-2023 00:00	MW10	✓	✓	✓	✓	✓	✓	✓
ES2313946-012	26-Apr-2023 00:00	MW12	✓	✓	✓	✓	✓	✓	✓
ES2313946-013	26-Apr-2023 00:00	MW13	✓	✓	✓	✓	✓	✓	✓
ES2313946-014	27-Apr-2023 00:00	MW101	✓	✓	✓	✓	✓	✓	✓
ES2313946-015	27-Apr-2023 00:00	MW102	✓	✓	✓	✓	✓	✓	✓
ES2313946-016	27-Apr-2023 00:00	MW103	✓	✓	✓	✓	✓	✓	✓
ES2313946-017	26-Apr-2023 00:00	QW01				✓	✓	✓	
ES2313946-018	27-Apr-2023 00:00	SW01				✓		✓	
ES2313946-019	27-Apr-2023 00:00	SW02				✓		✓	

Matrix: **WATER**

Laboratory sample ID	*Sampling date / time*	*Sample ID*	WATER - EP080 BTEXN	WATER - W-02T 8 metals (Total)	WATER - W-04 TRH/BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN
ES2313946-018	27-Apr-2023 00:00	SW01		✓		
ES2313946-019	27-Apr-2023 00:00	SW02		✓		
ES2313946-020	18-Apr-2023 00:00	RB1		✓		
ES2313946-021	19-Apr-2023 00:00	RB2		✓		
ES2313946-022	20-Apr-2023 00:00	RB3		✓		

			WATER - EP080 BTEXN	WATER - W-02T 8 metals (Total)	WATER - W-04 TRH/BTEXN	WATER - W-18 TRH(C6 - C9)/BTEXN
ES2313946-023	26-Apr-2023 00:00	RB4		✓	✓	
ES2313946-024	27-Apr-2023 00:00	RB5		✓	✓	
ES2313946-025	17-Apr-2023 00:00	Trip blank				✓
ES2313946-026	17-Apr-2023 00:00	Trip spike	✓			

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS PAYABLE		
- A4 - AU Tax Invoice (INV)	Email	inbox@cavvanba.com
DREW WOOD		
- *AU Certificate of Analysis - NATA (COA)	Email	drew@cavvanba.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	drew@cavvanba.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	drew@cavvanba.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	drew@cavvanba.com
- Chain of Custody (CoC) (COC)	Email	drew@cavvanba.com
- EDI Format - ENMRG (ENMRG)	Email	drew@cavvanba.com
ROB MCLELLAND		
- A4 - AU Tax Invoice (INV)	Email	rob@cavvanba.com
ZAC LAUGHLAN		
- *AU Certificate of Analysis - NATA (COA)	Email	zac@cavvanba.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	zac@cavvanba.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	zac@cavvanba.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	zac@cavvanba.com
- Chain of Custody (CoC) (COC)	Email	zac@cavvanba.com
- EDI Format - ENMRG (ENMRG)	Email	zac@cavvanba.com

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

☐ADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com

☐MACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com

☐MELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

☐MUDGEE 27 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304
Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

☐NOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com

☐PERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

LAB OF ORIGIN: NEWCASTLE

CLIENT: Cavvanba Consulting

OFFICE: Newcastle

PROJECT: 20025.76

ORDER NUMBER: 20025.76

PROJECT MANAGER: Drew Wood

CONTACT PH: 0403 689 755

SAMPLER: Zac Laughlan

SAMPLER MOBILE: 0428 288 854

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com

Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)

☒ Standard TAT **(List due date):**

☐ Non Standard or urgent TAT **(List due date):**

ALS QUOTE NO.: SY/159/20

COC SEQUENCE NUMBER (Circle)

COC: [✓ 1] 2 3 4 5 6 7

OF: 1 [✓ 2] 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No [✓ N/A]

[✓ Free ice] / frozen ice bricks present upon receipt? [✓ Yes] No N/A

Random Sample Temperature on Receipt: °C

Other comment: 3.2

RELINQUISHED BY:
DATE/TIME: 28.4.23

RECEIVED BY:
DATE/TIME: 28.4.23 11:30

RELINQUISHED BY: LC
DATE/TIME: 28/4/23 4:50pm

RECEIVED BY: 50888 Kefl/ho AJ
DATE/TIME: 28/4/23 1940

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place additional bottles ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	W - TRH/BTEXN/PAH/VOCs (W-10)	W - Metals dissolved (8)	W-28 Natural attenuation Indicators (Nitrate, Sulfate, Ferrous Iron, Methane)	PFAS - Short suite	Manganese	Chromium speciation	Hardness - Total as CaCO3 ED093FX + TRH	WT - Metals total (8)	BTEX + TRH	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	W2	27/04/2023	Water			X	X		X		X	X			Additional sample collected for PFAS QA
2	W3	27/04/2023	Water			X	X		X		X	X			
3	MW01	27/04/2023	Water			X	X	X	X	X	X	X			
4	MW02	26/04/2023	Water			X	X	X	X	X	X	X			
5	MW03	26/04/2023	Water			X	X		X		X	X			
6	MW04	26/04/2023	Water			X	X	X	X	X	X	X			Additional sample collected for TRH QA
7	MW05	26/04/2023	Water			X	X	X	X	X	X	X			
8	MW06	27/04/2023	Water					X		X					Sample collected from contaminated well
9	MW07	26/04/2023	Water			X	X	X	X	X	X	X			
10	MW09	26/04/2023	Water			X	X	X	X	X	X	X			
11	MW10	27/04/2023	Water			X	X	X	X	X	X	X			
12	MW12	26/04/2023	Water			X	X	X	X	X	X	X			
13	MW13	26/04/2023	Water			X	X	X	X	X	X	X			
14	MW101	27/04/2023	Water			X	X	X	X	X	X	X			
15	MW102	27/04/2023	Water			X	X	X	X	X	X	X			
16	MW103	27/04/2023	Water			X	X	X	X	X	X	X			
17	QW01	26/04/2023	Water			X	X		X						
—	QW02	26/04/2023	Water			Please forward to Eurofins for analysis W - TRH/BTEXN/PAH/VOCs (W-10) + PFAS short suite									
				TOTAL											

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Environmental Division
Sydney
Work Order Reference
ES2313946

Telephone : + 61-2-8784 8555

ALS Environmental

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

LAB OF ORIGIN: NEWCASTLE

CLIENT: Cavvanba Consulting
OFFICE: Newcastle
PROJECT: 20025.76
ORDER NUMBER: 20025.76
PROJECT MANAGER: Drew Wood **CONTACT PH:** 0403 689 755
SAMPLER: Zac Laughlan **SAMPLER MOBILE:** 0428 288 854
COC emailed to ALS? (YES / NO) **EDD FORMAT (or default):**
Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)
☒ Standard TAT **(List due date):**
☐ Non Standard or urgent TAT **(List due date):**
ALS QUOTE NO.: SY/159/20

COC SEQUENCE NUMBER (Circle)
COC: 1 [✓ 2] 3 4 5 6 7
OF: 1 [✓ 2] 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No [✓ N/A]
[✓ Free ice] / frozen ice bricks present upon receipt? [✓ Yes] No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:
DATE/TIME: 27·4·23

RECEIVED BY:
DATE/TIME: 28·4·23 11:30

RELINQUISHED BY: LC
DATE/TIME: 28/4/23 4.50pm

RECEIVED BY: 508 Yho
DATE/TIME: 28/4/23/940

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place additional bottles ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	W - TRH/BTEXN/PAH/VOCs (W-10)	W - Metals (8)	W-28 Natural attenuation Indicators (Nitrate, Sulfate, Ferrous Iron, Methane)	PFAS - Short suite	Manganese	Chromium speciation	Hardness - Total as CaCO3 ED093FX + TRH	WT - Metals total (8)	BTEX + TRH	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
18	SW01	27/04/2023	Water			X			X				X		
19	SW02	27/04/2023	Water			X			X				X		
20	RB1	18/04/2023	Water										X		
21	RB2	19/04/2023	Water										X		
22	RB3	20/04/2023	Water										X		
23	RB4	26/04/2023	Water										X	X	
24	RB5	27/04/2023	Water										X	X	
25	Trip blank		Water											X	
26	Trip spike		Water											X	
			Water												
			Water												
			Water												
			Water												
			Water												
			Water												
			Water												
			Water												
			Water												
			Water												
				TOTAL											

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Cavvanba Consulting
1 / 66 Centennial Cct
Byron Bay
NSW 2481

Attention:	**Drew Wood**
Report	**984747-S**
Project name	
Project ID	20025.76
Received Date	Apr 27, 2023

Client Sample ID **Sample Matrix** **Eurofins Sample No.** **Date Sampled** Test/Reference	LOR	Unit	**QS102** **Soil** **S23-Ap0060302** **Apr 18, 2023**	**QS104** **Soil** **S23-Ap0060303** **Apr 18, 2023**	**QS106** **Soil** **S23-Ap0060304** **Apr 19, 2023**	**QS108** **Soil** **S23-Ap0060305** **Apr 20, 2023**
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	30	40	23	< 20
TRH C15-C28	50	mg/kg	190	460	170	170
TRH C29-C36	50	mg/kg	360	940	210	350
TRH C10-C36 (Total)	50	mg/kg	580	1440	403	520
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	61	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	61	< 50	< 50
TRH >C16-C34	100	mg/kg	440	1100	300	400
TRH >C34-C40	100	mg/kg	290	710	180	280
TRH >C10-C40 (total)*	100	mg/kg	730	1871	480	680
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	85	89	92	95
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			**QS102**	**QS104**	**QS106**	**QS108**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S23-Ap0060302**	**S23-Ap0060303**	**S23-Ap0060304**	**S23-Ap0060305**
Date Sampled			**Apr 18, 2023**	**Apr 18, 2023**	**Apr 19, 2023**	**Apr 20, 2023**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	1.1	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	111	131	113	106
p-Terphenyl-d14 (surr.)	1	%	90	99	97	84
Heavy Metals						
Arsenic	2	mg/kg	120	100	14	5.7
Cadmium	0.4	mg/kg	3.1	3.0	1.3	0.5
Chromium	5	mg/kg	52	76	45	18
Copper	5	mg/kg	440	940	480	160
Lead	5	mg/kg	1300	240	940	140
Mercury	0.1	mg/kg	0.1	< 0.1	0.1	< 0.1
Nickel	5	mg/kg	44	34	14	11
Zinc	5	mg/kg	770	890	450	490
Sample Properties						
% Moisture	1	%	20	7.7	17	3.9

Client Sample ID			**QS110**	**QS112**
Sample Matrix			**Soil**	**Soil**
Eurofins Sample No.			**S23-Ap0060306**	**S23-Ap0060307**
Date Sampled			**Apr 20, 2023**	**Apr 20, 2023**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons				
TRH C6-C9	20	mg/kg	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20
TRH C15-C28	50	mg/kg	84	58
TRH C29-C36	50	mg/kg	130	130
TRH C10-C36 (Total)	50	mg/kg	214	188
TRH C6-C10	20	mg/kg	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	170	140
TRH >C34-C40	100	mg/kg	130	150
TRH >C10-C40 (total)*	100	mg/kg	300	290
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	102	98

Client Sample ID			**QS110**	**QS112**
Sample Matrix			**Soil**	**Soil**
Eurofins Sample No.			**S23-Ap0060306**	**S23-Ap0060307**
Date Sampled			**Apr 20, 2023**	**Apr 20, 2023**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene N02	0.5	mg/kg	< 0.5	< 0.5
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene N07	0.5	mg/kg	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	109	76
p-Terphenyl-d14 (surr.)	1	%	99	68
Heavy Metals				
Arsenic	2	mg/kg	5.2	9.3
Cadmium	0.4	mg/kg	0.6	< 0.4
Chromium	5	mg/kg	35	39
Copper	5	mg/kg	140	160
Lead	5	mg/kg	160	190
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	16	14
Zinc	5	mg/kg	440	150
Sample Properties				
% Moisture	1	%	15	14

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 28, 2023	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 28, 2023	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Apr 28, 2023	14 Days
BTEX - Method: LTM-ORG-2010 BTEX and Volatile TRH	Sydney	Apr 28, 2023	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Apr 28, 2023	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Apr 28, 2023	28 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Sydney	Apr 28, 2023	14 Days

Company Name: Cavvanba Consulting
Address: 1 / 66 Centennial Cct
Byron Bay
NSW 2481

Order No.:
Report #: 984747
Phone: 02 6685 7811
Fax: 02 6685 5083

Received: Apr 27, 2023 3:50 PM
Due: May 4, 2023
Priority: 5 Day
Contact Name: Drew Wood

Project Name:
Project ID: 20025.76

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Eurofins Suite B7
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	QS102	Apr 18, 2023		Soil	S23-Ap0060302	X	X
2	QS104	Apr 18, 2023		Soil	S23-Ap0060303	X	X
3	QS106	Apr 19, 2023		Soil	S23-Ap0060304	X	X
4	QS108	Apr 20, 2023		Soil	S23-Ap0060305	X	X
5	QS110	Apr 20, 2023		Soil	S23-Ap0060306	X	X
6	QS112	Apr 20, 2023		Soil	S23-Ap0060307	X	X
Test Counts						6	6

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

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

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	101			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	%	78			70-130	Pass	
TRH C6-C10	%	102			70-130	Pass	
TRH >C10-C16	%	81			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	92			70-130	Pass	
Toluene	%	91			70-130	Pass	
Ethylbenzene	%	97			70-130	Pass	
m&p-Xylenes	%	115			70-130	Pass	
o-Xylene	%	111			70-130	Pass	
Xylenes - Total*	%	114			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	88			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	103			70-130	Pass	
Acenaphthylene	%	103			70-130	Pass	
Anthracene	%	111			70-130	Pass	
Benz(a)anthracene	%	105			70-130	Pass	
Benzo(a)pyrene	%	101			70-130	Pass	
Benzo(b&j)fluoranthene	%	104			70-130	Pass	
Benzo(g.h.i)perylene	%	103			70-130	Pass	
Benzo(k)fluoranthene	%	98			70-130	Pass	
Chrysene	%	109			70-130	Pass	
Dibenz(a.h)anthracene	%	95			70-130	Pass	
Fluoranthene	%	113			70-130	Pass	
Fluorene	%	106			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	100			70-130	Pass	
Naphthalene	%	102			70-130	Pass	
Phenanthrene	%	104			70-130	Pass	
Pyrene	%	117			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	100			80-120	Pass	
Cadmium	%	104			80-120	Pass	
Chromium	%	98			80-120	Pass	
Copper	%	94			80-120	Pass	
Lead	%	87			80-120	Pass	
Mercury	%	103			80-120	Pass	
Nickel	%	108			80-120	Pass	
Zinc	%	105			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C10-C14	S23-Ap0061756	NCP	%	80			70-130	Pass	
TRH >C10-C16	S23-Ap0061756	NCP	%	79			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S23-My0005381	NCP	%	78			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S23-Ap0059391	NCP	%	101			70-130	Pass	
Acenaphthylene	S23-Ap0059391	NCP	%	99			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Anthracene	S23-Ap0059391	NCP	%	106			70-130	Pass	
Benz(a)anthracene	S23-Ap0059391	NCP	%	99			70-130	Pass	
Benzo(a)pyrene	S23-Ap0059391	NCP	%	100			70-130	Pass	
Benzo(b&j)fluoranthene	S23-Ap0059391	NCP	%	93			70-130	Pass	
Benzo(g.h.i)perylene	S23-Ap0059391	NCP	%	98			70-130	Pass	
Benzo(k)fluoranthene	S23-Ap0059391	NCP	%	99			70-130	Pass	
Chrysene	S23-Ap0059391	NCP	%	108			70-130	Pass	
Dibenz(a.h)anthracene	S23-Ap0059391	NCP	%	78			70-130	Pass	
Fluoranthene	S23-Ap0059391	NCP	%	108			70-130	Pass	
Fluorene	S23-Ap0059391	NCP	%	103			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S23-Ap0059391	NCP	%	87			70-130	Pass	
Naphthalene	S23-Ap0059391	NCP	%	100			70-130	Pass	
Phenanthrene	S23-Ap0059391	NCP	%	98			70-130	Pass	
Pyrene	S23-Ap0059391	NCP	%	115			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S23-Ap0055612	NCP	%	94			75-125	Pass	
Cadmium	S23-Ap0060302	CP	%	102			75-125	Pass	
Chromium	S23-Ap0060302	CP	%	103			75-125	Pass	
Copper	S23-Ap0055612	NCP	%	94			75-125	Pass	
Lead	S23-Ap0055612	NCP	%	82			75-125	Pass	
Mercury	S23-Ap0060302	CP	%	109			75-125	Pass	
Nickel	S23-Ap0060302	CP	%	101			75-125	Pass	
Zinc	S23-Ap0060302	CP	%	87			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	S23-Ap0060304	CP	%	103			70-130	Pass	
TRH C6-C10	S23-Ap0060304	CP	%	106			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S23-Ap0060304	CP	%	100			70-130	Pass	
Toluene	S23-Ap0060304	CP	%	90			70-130	Pass	
Ethylbenzene	S23-Ap0060304	CP	%	96			70-130	Pass	
m&p-Xylenes	S23-Ap0060304	CP	%	107			70-130	Pass	
o-Xylene	S23-Ap0060304	CP	%	115			70-130	Pass	
Xylenes - Total*	S23-Ap0060304	CP	%	110			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C10-C14	S23-Ap0055614	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S23-Ap0055614	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S23-Ap0055614	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C10-C16	S23-Ap0055614	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S23-Ap0055614	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S23-Ap0055614	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Benzo(k)fluoranthene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S23-Ap0057819	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S23-Ap0060223	NCP	mg/kg	7.7	6.7	13	30%	Pass	
Cadmium	S23-Ap0060223	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S23-Ap0060223	NCP	mg/kg	16	14	11	30%	Pass	
Copper	S23-Ap0060223	NCP	mg/kg	17	16	3.0	30%	Pass	
Lead	S23-Ap0060223	NCP	mg/kg	45	48	7.2	30%	Pass	
Mercury	S23-Ap0060223	NCP	mg/kg	4.4	4.2	4.7	30%	Pass	
Nickel	S23-Ap0060223	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S23-Ap0060223	NCP	mg/kg	35	28	22	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	S23-Ap0060300	NCP	%	8.1	9.2	13	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S23-Ap0060306	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C6-C10	S23-Ap0060306	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S23-Ap0060306	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S23-Ap0060306	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S23-Ap0060306	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S23-Ap0060306	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S23-Ap0060306	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S23-Ap0060306	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S23-Ap0060306	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Bonnie Pu	Analytical Services Manager
Mickael Ros	Senior Analyst-Metal
Raymond Siu	Senior Analyst-Volatile
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Volatile

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

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Company Name: Cavvanba Consulting
Address: 1 / 66 Centennial Cct
Byron Bay
NSW 2481

Project Name:
Project ID: 20025.76

Order No.:
Report #: 984747
Phone: 02 6685 7811
Fax: 02 6685 5083

Received: Apr 27, 2023 3:50 PM
Due: May 4, 2023
Priority: 5 Day
Contact Name: Drew Wood

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Eurofins Suite B7
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	QS102	Apr 18, 2023		Soil	S23-Ap0060302	X	X
2	QS104	Apr 18, 2023		Soil	S23-Ap0060303	X	X
3	QS106	Apr 19, 2023		Soil	S23-Ap0060304	X	X
4	QS108	Apr 20, 2023		Soil	S23-Ap0060305	X	X
5	QS110	Apr 20, 2023		Soil	S23-Ap0060306	X	X
6	QS112	Apr 20, 2023		Soil	S23-Ap0060307	X	X
Test Counts						6	6

CHAIN OF CUSTODY

CLIENT: Cavvanba Consulting

OFFICE: Newcastle

PROJECT: 20025.76

ORDER NUMBER: 20025.76

PROJECT MANAGER: Drew Wood   **CONTACT PH:** 0403 689 755

SAMPLER: Zac Laughlan   **SAMPLER MOBILE:** 0428 288 854

COC emailed to ALS? (YES / NO)   **EDD FORMAT (or default):**

Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com

Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g Ultra Trace Organics)

☒ Standard TAT (List due date):

☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SYBQ-409-21

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7 8 9 10 11

OF: 1 2 3 4 5 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? [✓ Yes] No N/A

Free ice / frozen ice bricks present upon receipt? [✓ Yes] No N/A

Random Sample Temperature on Receipt: 9.8 °C

Other comment:

RELINQUISHED BY:

DATE/TIME: 24/04/2023

RECEIVED BY:

DATE/TIME: 24/4/23 9:50

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY: Brandon

DATE/TIME: 27/4/23 5pm

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)			Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc
1	TP104_0.2-0.3	18/04/2023	Soil		1				
2	TP104_0.3-0.4	18/04/2023	Soil		1				
3	TP105_0-0.1	18/04/2023	Soil		1	X			
4	TP105_0.3-0.4	18/04/2023	Soil		1	X			
5	TP106_0-0.1	18/04/2023	Soil		1	X			
6	TP106_0.3-0.4	18/04/2023	Soil		1				
7	TP107_0-0.1	18/04/2023	Soil		1	X			
8	TP107_0.3-0.4	18/04/2023	Soil		1	X			
9	TP108_0-0.1	19/04/2023	Soil		1	X			
10	TP108_0.3-0.4	19/04/2023	Soil		1				
11	TP109_0-0.1	19/04/2023	Soil		1	X	X		
12	TP109_0.5-0.6	19/04/2023	Soil		1				
13	TP110_0-0.1	19/04/2023	Soil		1	X			
14	TP110_0.3-0.4	19/04/2023	Soil		1	X			
15	TP111_0-0.1	19/04/2023	Soil		1	X			
16	TP111_0.3-0.4	19/04/2023	Soil		1				
17	TP112_0-0.1	19/04/2023	Soil		1	X			
18	TP112_0.3-0.4	19/04/2023	Soil		1				
19	TP113_0-0.1	19/04/2023	Soil		1	X			
20	TP113_0.4-0.5	19/04/2023	Soil		1	X	X		
21	TP114_0-0.1	20/04/2023	Soil		1	X			

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag

Environmental Division
Sydney
Work Order Reference
ES2313408

Telephone : + 61-2-8784 8555

Subcon / Forward Lab / Split WO SS23 13346

Lab / Analysis:

Organised By / Date:

Relinquished By / Date:

Connote / Courier:

WO No:

Attached By PO / Internal Sheet:

984747

CHAIN OF CUSTODY

CLIENT: Cavvanba Consulting	**TURNAROUND REQUIREMENTS :**	☒ Standard TAT (**List due date**):	
OFFICE: Newcastle	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Non Standard or urgent TAT (**List due date**):	
PROJECT: 20025.76	**ALS QUOTE NO.:** SYBQ-409-21		
ORDER NUMBER: 20025.76			
PROJECT MANAGER: Drew Wood	**CONTACT PH:** 0403 689 755		
SAMPLER: Zac Laughlan	**SAMPLER MOBILE:** 0428 288 854		
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**		

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7 8 9 10 11

OF: 1 2 3 4 [✓ 5] 6 7 8 9 10 11

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt		°C	
Other comment:			

Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com

Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 24/04/2023	DATE/TIME: 24/4/23	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).												Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN										Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
22	TP114_0.3-0.4	20/04/2023	Soil		1													
23	TP115_0-0.1	20/04/2023	Soil		1	X												
24	TP115_0.3-0.4	20/04/2023	Soil		1	X												
25	TP116_0-0.1	20/04/2023	Soil		1	X												
26	TP116_0.3-0.4	20/04/2023	Soil		1													
27	TP117_0-0.1	20/04/2023	Soil		1	X												
28	TP117_0.3-0.4	20/04/2023	Soil		1													
29	TP118_0-0.1	20/04/2023	Soil		1	X												
30	TP118_0.3-0.4	20/04/2023	Soil		1													
31	MW101_0-0.1	19/04/2023	Soil		1													
32	MW101_0.5-0.6	19/04/2023	Soil		1													
33	MW101_0.8-0.9	19/04/2023	Soil		1													
34	MW101_2.5-2.6	21/04/2023	Soil		1													
35	MW101_5.0-5.1	21/04/2023	Soil		1													
36	MW102_0-0.1	19/04/2023	Soil		1													
37	MW102_0.5-0.6	19/04/2023	Soil		1													
38	MW102_1.2-1.3	19/04/2023	Soil		1													
39	MW102_2.0-2.1	21/04/2023	Soil		1													
40	MW102_3.0-3.1	21/04/2023	Soil		1													
41	MW102_4.0-4.1	21/04/2023	Soil		1													

Water Container Codes: [illegible]

984747

CHAIN OF CUSTODY

ALS Laboratory
please tick →

CLIENT: Cavvanba Consulting	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Newcastle			Custody Seal Intact? Yes No N/A
PROJECT: 20025.76	ALS QUOTE NO.: SYBQ-409-21	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 20025.76		COC: 1 2 3 4 5 6 7 8 9 10 11	Random Sample Temperature on Receipt C
PROJECT MANAGER: Drew Wood	CONTACT PH: 0403 689 755	OF: 1 2 3 4 5 6 7 8 9 10 11	Other comment

SAMPLER: Zac Laughlan	SAMPLER MOBILE: 0428 288 854	RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):				
Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com		DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com		24/04/2023			

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).			Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	S-26: TRH/BTEXN/PAHs/8 Metals	Asbestos ID	TRH + BTEXN	
42	MW102_5.0-5.1	21/04/2023	Soil		1				
43	MW102_6.0-6.1	21/04/2023	Soil		1				
44	MW102_7.0-7.1	21/04/2023	Soil		1				
45	MW103_0-0.1	19/04/2023	Soil		1				
46	MW103_0.2-0.3	19/04/2023	Soil		1	X			
47	MW103_0.5-0.6	19/04/2023	Soil		1				
48	MW103_1.2-1.3	19/04/2023	Soil		1				
49	MW103_2.0-2.1	20/04/2023	Soil		1				
50	MW103_3.0-3.1	20/04/2023	Soil		1				
51	MW103_4.0-4.1	20/04/2023	Soil		1				
52	MW103_5.0-5.1	20/04/2023	Soil		1				
53	MW103_6.0-6.1	20/04/2023	Soil		1				
54	MW103_7.0-7.1	20/04/2023	Soil		1				
55	QS101	18/04/2023	Soil		1	X			
X	QS102	18/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals			
56	QS103	18/04/2023	Soil		1	X			
X	QS104	18/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals			
57	QS105	19/04/2023	Soil		1	X			
X	QS106	19/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals			
58	QS107	20/04/2023	Soil		1	X			
X	QS108	20/04/2023	Soil		1	Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals			

Water Container Codes: [illegible]

984747.

CHAIN OF CUSTODY

ALS Laboratory.
please tick →

CLIENT: Cavvanba Consulting	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☒ Standard TAT (**List due date**): ☐ Non Standard or urgent TAT (**List due date**):	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Newcastle			Custody Seal Intact? Yes No N/A
PROJECT: 20025.76	**ALS QUOTE NO.:** SYBQ-409-21	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER: 20025.76		COC: 1 2 3 4 5 6 7 8 9 10 11	Random Sample Temperature on Receipt: C
PROJECT MANAGER: Drew Wood	**CONTACT PH:** 0403 689 755	OF: 1 2 3 4 5 6 7 8 9 10 11	Other comment

SAMPLER: Zac Laughlan	**SAMPLER MOBILE:** 0428 288 854	**RELINQUISHED BY:**	**RECEIVED BY:** Fmo: 8	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**				
Email Reports to (will default to PM if no other addresses are listed): drew@cavvanba.com, zac@cavvanba.com		DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): rob@cavvanba.com		24/04/2023	24/4/23 9:50		

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please place remaining samples ON HOLD

ALS USE	**SAMPLE DETAILS** MATRIX SOLID (S) WATER (W)			**CONTAINER INFORMATION**		**ANALYSIS REQUIRED including SUITES** (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).										**Additional Information**
LAB ID	**SAMPLE ID**	**DATE / TIME**	**MATRIX**	**TYPE & PRESERVATIVE** (refer to codes below)	**TOTAL CONTAINERS**	**S-26: TRH/BTEXN/PAHs/8 Metals**	**Asbestos ID**	**TRH + BTEXN**								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
59	QS109	20/04/2023	Soil		1	X										
x	QS110	20/04/2023	Soil		1	**Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals**										
60	QS111	20/04/2023	Soil		1	X										
x	QS112	20/04/2023	Soil		1	**Please forward to Eurofins for analysis - TRH/BTEXN/PAHs/8 Metals**										
61	ACM101	18/04/2023	Soil		1		X									
62	ACM102	18/04/2023	Soil		1		X									
63	ACM103	19/04/2023	Soil		1		X									
64	ACM104	19/04/2023	Soil		1		X									
65	ACM105	20/04/2023	Soil		1		X									
66	Trip Blank		Soil		1			X								
67	Trip Spike		Soil		1			X								
68	TSC		Soil													
			Soil													
			Soil													
			Soil													
			Soil													
			Soil													
			Soil													
			Soil													

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Ba

984747

Sample Receipt Advice

Company name:	Cavvanba Consulting
Contact name:	Drew Wood
Project name:	Not provided
Project ID:	20025.76
Turnaround time:	5 Day
Date/Time received	Apr 27, 2023 3:50 PM
Eurofins reference	984747

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 1.8 degrees Celsius.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
✗	Split sample sent to requested external lab.
✗	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

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

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Drew Wood - drew@cavvanba.com.

Note: A copy of these results will also be delivered to the general Cavvanba Consulting email address.

Global Leader - Results you can trust

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Cavvanba Consulting
1 / 66 Centennial Cct
Byron Bay
NSW 2481

Attention:	**Drew Wood**
Report	**985222-W**
Project name	
Project ID	20025.75
Received Date	May 01, 2023

Client Sample ID **Sample Matrix** **Eurofins Sample No.** **Date Sampled** Test/Reference	LOR	Unit	**QW02** **Water** **S23-My0001664** **Apr 26, 2023**
Total Recoverable Hydrocarbons			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	127
Volatile Organics			
1.1-Dichloroethane	0.001	mg/L	< 0.001
1.1-Dichloroethene	0.001	mg/L	< 0.001
1.1.1-Trichloroethane	0.001	mg/L	< 0.001
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.1.2-Trichloroethane	0.001	mg/L	< 0.001
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001
1.2-Dibromoethane	0.001	mg/L	< 0.001
1.2-Dichlorobenzene	0.001	mg/L	< 0.001
1.2-Dichloroethane	0.001	mg/L	< 0.001
1.2-Dichloropropane	0.001	mg/L	< 0.001
1.2.3-Trichloropropane	0.001	mg/L	< 0.001
1.2.4-Trimethylbenzene	0.001	mg/L	< 0.001
1.3-Dichlorobenzene	0.001	mg/L	< 0.001
1.3-Dichloropropane	0.001	mg/L	< 0.001

Client Sample ID			**QW02**
Sample Matrix			**Water**
Eurofins Sample No.			**S23-My0001664**
Date Sampled			**Apr 26, 2023**
Test/Reference	LOR	Unit	
Volatile Organics			
1.3.5-Trimethylbenzene	0.001	mg/L	< 0.001
1.4-Dichlorobenzene	0.001	mg/L	< 0.001
2-Butanone (MEK)	0.005	mg/L	< 0.005
2-Propanone (Acetone)	0.005	mg/L	< 0.005
4-Chlorotoluene	0.001	mg/L	< 0.001
4-Methyl-2-pentanone (MIBK)	0.005	mg/L	< 0.005
Allyl chloride	0.001	mg/L	< 0.001
Benzene	0.001	mg/L	< 0.001
Bromobenzene	0.001	mg/L	< 0.001
Bromochloromethane	0.001	mg/L	< 0.001
Bromodichloromethane	0.001	mg/L	< 0.001
Bromoform	0.001	mg/L	< 0.001
Bromomethane	0.005	mg/L	< 0.005
Carbon disulfide	0.001	mg/L	< 0.001
Carbon Tetrachloride	0.001	mg/L	< 0.001
Chlorobenzene	0.001	mg/L	< 0.001
Chloroethane	0.005	mg/L	< 0.005
Chloroform	0.005	mg/L	< 0.005
Chloromethane	0.005	mg/L	< 0.005
cis-1.2-Dichloroethene	0.001	mg/L	< 0.001
cis-1.3-Dichloropropene	0.001	mg/L	< 0.001
Dibromochloromethane	0.001	mg/L	< 0.001
Dibromomethane	0.001	mg/L	< 0.001
Dichlorodifluoromethane	0.005	mg/L	< 0.005
Ethylbenzene	0.001	mg/L	< 0.001
Iodomethane	0.001	mg/L	< 0.001
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
Methylene Chloride	0.005	mg/L	< 0.005
o-Xylene	0.001	mg/L	< 0.001
Styrene	0.001	mg/L	< 0.001
Tetrachloroethene	0.001	mg/L	0.001
Toluene	0.001	mg/L	< 0.001
trans-1.2-Dichloroethene	0.001	mg/L	< 0.001
trans-1.3-Dichloropropene	0.001	mg/L	< 0.001
Trichloroethene	0.001	mg/L	< 0.001
Trichlorofluoromethane	0.005	mg/L	< 0.005
Vinyl chloride	0.005	mg/L	< 0.005
Xylenes - Total*	0.003	mg/L	< 0.003
Total MAH*	0.003	mg/L	< 0.003
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005
4-Bromofluorobenzene (surr.)	1	%	127
Toluene-d8 (surr.)	1	%	120
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene^{N02}	0.01	mg/L	< 0.01

Client Sample ID			**QW02**
Sample Matrix			**Water**
Eurofins Sample No.			**S23-My0001664**
Date Sampled			**Apr 26, 2023**
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene[N07]	0.001	mg/L	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	< 0.001
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	< 0.001
2-Fluorobiphenyl (surr.)	1	%	55
p-Terphenyl-d14 (surr.)	1	%	112
Per- and Polyfluoroalkyl Substances (PFASs) - Short			
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)[N11]	0.05	ug/L	< 0.05
13C2-6:2 FTSA (surr.)	1	%	122
Perfluorohexanesulfonic acid (PFHxS)[N11]	0.01	ug/L	< 0.01
Perfluorooctanesulfonic acid (PFOS)[N11]	0.01	ug/L	< 0.01
18O2-PFHxS (surr.)	1	%	116
13C8-PFOS (surr.)	1	%	112
Perfluorooctanoic acid (PFOA)[N11]	0.01	ug/L	< 0.01
13C8-PFOA (surr.)	1	%	112
Sum (PFHxS + PFOS)*	0.01	ug/L	< 0.01
Sum of US EPA PFAS (PFOS + PFOA)*	0.01	ug/L	< 0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	0.01	ug/L	< 0.01

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B4			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	May 02, 2023	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 02, 2023	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 02, 2023	7 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	May 02, 2023	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Polycyclic Aromatic Hydrocarbons	Sydney	May 02, 2023	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Volatile Organics	Sydney	May 02, 2023	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Per- and Polyfluoroalkyl Substances (PFASs) - Short	Sydney	May 02, 2023	28 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

Company Name: Cavvanba Consulting
Address: 1 / 66 Centennial Cct
Byron Bay
NSW 2481

Project Name:
Project ID: 20025.75

Order No.:
Report #: 985222
Phone: 02 6685 7811
Fax: 02 6685 5083

Received: May 1, 2023 1:33 PM
Due: May 8, 2023
Priority: 5 Day
Contact Name: Drew Wood

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Volatile Organics	Eurofins Suite B4	Per- and Polyfluoroalkyl Substances (PFASs) - Short
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	QW02	Apr 26, 2023		Water	S23-My0001664	X	X	X
Test Counts						1	1	1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

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

QC - Acceptance Criteria

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

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

Results <10 times the LOR: No Limit

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total*	mg/L	< 0.003			0.003	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.005			0.005	Pass	
2-Propanone (Acetone)	mg/L	< 0.005			0.005	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.005			0.005	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.005			0.005	Pass	
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.005			0.005	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	
Dichlorodifluoromethane	mg/L	< 0.005			0.005	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
Methylene Chloride	mg/L	< 0.005			0.005	Pass	
Styrene	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.005			0.005	Pass	
Vinyl chloride	mg/L	< 0.005			0.005	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Per- and Polyfluoroalkyl Substances (PFASs) - Short							
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	ug/L	< 0.05			0.05	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/L	< 0.01			0.01	Pass	
Perfluorooctanoic acid (PFOA)	ug/L	< 0.01			0.01	Pass	
Sum of US EPA PFAS (PFOS + PFOA)*	ug/L	-			0.01	N/A	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	101			70-130	Pass	
TRH C10-C14	%	120			70-130	Pass	
TRH C6-C10	%	100			70-130	Pass	
TRH >C10-C16	%	120			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	119			70-130	Pass	
Toluene	%	109			70-130	Pass	
Ethylbenzene	%	99			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
m&p-Xylenes	%	90			70-130	Pass	
o-Xylene	%	94			70-130	Pass	
Xylenes - Total*	%	92			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	91			70-130	Pass	
1.1.1-Trichloroethane	%	88			70-130	Pass	
1.2-Dichlorobenzene	%	82			70-130	Pass	
1.2-Dichloroethane	%	87			70-130	Pass	
Trichloroethene	%	83			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	88			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	88			70-130	Pass	
Acenaphthylene	%	92			70-130	Pass	
Anthracene	%	94			70-130	Pass	
Benz(a)anthracene	%	94			70-130	Pass	
Benzo(a)pyrene	%	109			70-130	Pass	
Benzo(b&j)fluoranthene	%	112			70-130	Pass	
Benzo(g.h.i)perylene	%	96			70-130	Pass	
Benzo(k)fluoranthene	%	113			70-130	Pass	
Chrysene	%	109			70-130	Pass	
Dibenz(a.h)anthracene	%	90			70-130	Pass	
Fluoranthene	%	91			70-130	Pass	
Fluorene	%	96			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	93			70-130	Pass	
Naphthalene	%	73			70-130	Pass	
Phenanthrene	%	90			70-130	Pass	
Pyrene	%	92			70-130	Pass	
LCS - % Recovery							
Per- and Polyfluoroalkyl Substances (PFASs) - Short							
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	%	106			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	105			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	113			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	105			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C10-C14	S23-My0008594	NCP	%	125			70-130	Pass	
TRH >C10-C16	S23-My0008594	NCP	%	126			70-130	Pass	
Spike - % Recovery									
Per- and Polyfluoroalkyl Substances (PFASs) - Short				Result 1					
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	S23-Ap0062206	NCP	%	112			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S23-Ap0062206	NCP	%	100			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S23-Ap0062206	NCP	%	111			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S23-My0014457	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S23-My0008601	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S23-My0008601	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S23-My0008601	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C6-C10	S23-My0014457	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S23-My0008601	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S23-My0008601	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S23-My0008601	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S23-My0014457	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S23-My0014457	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1-Dichloroethene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1-Trichloroethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2-Trichloroethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dibromoethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichlorobenzene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichloroethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2-Dichloropropane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2.3-Trichloropropane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.2.4-Trimethylbenzene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3-Dichlorobenzene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3-Dichloropropane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.3.5-Trimethylbenzene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
1.4-Dichlorobenzene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
2-Butanone (MEK)	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
2-Propanone (Acetone)	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
4-Chlorotoluene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Allyl chloride	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromobenzene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromochloromethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromodichloromethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromoform	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Bromomethane	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Carbon disulfide	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Carbon Tetrachloride	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chlorobenzene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chloroethane	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Chloroform	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Chloromethane	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
cis-1.2-Dichloroethene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
cis-1.3-Dichloropropene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
Dibromochloromethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibromomethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dichlorodifluoromethane	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Iodomethane	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Isopropyl benzene (Cumene)	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Methylene Chloride	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Styrene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Tetrachloroethene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
trans-1.2-Dichloroethene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
trans-1.3-Dichloropropene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Trichloroethene	S23-My0014457	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Trichlorofluoromethane	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Vinyl chloride	S23-My0014457	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S23-My0014457	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g.h.i)perylene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a.h)anthracene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	S23-My0009829	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Per- and Polyfluoroalkyl Substances (PFASs) - Short				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorooctanesulfonic acid(6:2 FTSA)	S23-My0002591	NCP	ug/L	< 0.05	< 0.05	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S23-My0002591	NCP	ug/L	0.12	0.13	5.3	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	S23-My0002591	NCP	ug/L	0.35	0.40	13	30%	Pass	
Perfluorooctanoic acid (PFOA)	S23-My0002591	NCP	ug/L	0.01	0.01	4.3	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.

Authorised by:

Andrew Black	Analytical Services Manager
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Volatile

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

eurofins

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IANZ# 1290

Company Name: Cavvanba Consulting
Address: 1 / 66 Centennial Cct
Byron Bay
NSW 2481

Project Name:
Project ID: 20025.75

Order No.:
Report #: 985222
Phone: 02 6685 7811
Fax: 02 6685 5083

Received: May 1, 2023 1:33 PM
Due: May 8, 2023
Priority: 5 Day
Contact Name: Drew Wood

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Volatile Organics	Eurofins Suite B4	Per- and Polyfluoroalkyl Substances (PFASs) - Short
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	QW02	Apr 26, 2023		Water	S23-My0001664	X	X	X
Test Counts						1	1	1

eurofins | Environment Testing

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ABN: 50 005 085 521

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VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	Tel: +61 2 4968 8448
Tel: +61 3 8564 5000	Tel: +61 3 8564 5000	Tel: +61 2 9900 8400	Tel: +61 2 6113 8091	Tel: +61 7 3902 4600	NATA# 1261
NATA# 1261 Site# 1254	NATA# 1261 Site# 25403	NATA# 1261 Site# 18217	NATA# 1261 Site# 25466	NATA# 1261 Site# 20794	Site# 25079 & 25289

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

Sample Receipt Advice

Company name:	Cavvanba Consulting
Contact name:	Drew Wood
Project name:	Not provided
Project ID:	20025.75
Turnaround time:	5 Day
Date/Time received	May 1, 2023 1:33 PM
Eurofins reference	985222

Sample Information

✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 3.2 degrees Celsius.

✓ All samples have been received as described on the above COC.

✓ COC has been completed correctly.

✓ Attempt to chill was evident.

✓ Appropriately preserved sample containers have been used.

✓ All samples were received in good condition.

✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

✓ Appropriate sample containers have been used.

✓ Sample containers for volatile analysis received with zero headspace.

✗ Split sample sent to requested external lab.

✗ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

Contact

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

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Drew Wood - drew@cavvanba.com.

Note: A copy of these results will also be delivered to the general Cavvanba Consulting email address.

CHAIN OF CUSTODY

ALS

CLIENT: [illegible]
OFFICE: Newcastle
PROJECT: 20025.75
ORDER NUMBER: 20025.75
PROJECT MANAGER: Drew Wood
SAMPLER: [illegible]
COC emailed to ALS? (YES / NO)
Email Reports to: [illegible]
Email Invoice to: [illegible]

TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
ALS QUOTE NO.: SY/458/M
COC SEQUENCE NUMBER (Circle): COC: 1 2 3 4 5 6 7 OF: 1 2 3 4 5 6 7

CONTACT PH: [illegible]
SAMPLER MOBILE: [illegible]
EDD FORMAT (or default):

RELINQUISHED BY:
DATE/TIME: 28.4.23

RECEIVED BY:
DATE/TIME: 28.4 [illegible] 30

RELINQUISHED BY:
DATE/TIME:

RECEIVED BY:
DATE/TIME:

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact?
Free ice / frozen ice bricks present upon receipt?
Random Sample Temperature on Receipt:
Other comment:

QWC2 / [illegible]

Subcon / Forward Lab / Split WO
Lab / Analysis:
Organised By / Date: 32
Relinquished By / Date:
Connote / Courier:
WO No:
Attached By PO / Internal Sheet:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: [illegible]

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE	TOTAL CONTAINERS	[illegible] (Water)	[illegible]	[illegible] Natural [illegible]	[illegible]	Lithium	Chromium speciation	[illegible]	[illegible]	TRH [illegible]	[illegible]
1	W2	27/04/2023	Water			X	X		X		X	X			Additional sample [illegible]
2	W1	27/04/2023	Water			X	X		X		X	X			
3	MW01	27/04/2023	Water			X	X	X	X	X	X	X			
4	MW02	26/04/2023	Water			X	X	X	X	X	X	X			
5	MW03	26/04/2023	Water			X	X		X		X	X			
6	MW04	26/04/2023	Water			X	X	X	X	X	X	X			Additional sample collected for [illegible]
7	MW05	26/04/2023	Water			X	X	X	X	X	X	X			
8	MW06	27/04/2023	Water					X		X					Sample [illegible]
9	MW07	26/04/2023	Water			X	X	X	X	X	X	X			
10	MW09	26/04/2023	Water			X	X	X	X	X	X	X			
11	MW10	27/04/2023	Water			X	X	X	X	X	X	X			
12	MW12	25/04/2023	Water			X	X	X	X	X	X	X			
13	MW13	28/04/2023	Water			X	X	X	X	X	X	X			
14	MW101	27/04/2023	Water			X	X	X	X	X	X	X			
15	MW102	27/04/2023	Water			X	X	X	X	X	X	X			
16	MW103	27/04/2023	Water			X	X	X	X	X	X	X			
17	GW01	25/04/2023	Water			X	X		X						
	GW02	25/04/2023	Water			Please forward to Envirolab for analysis W - TRH/BTEXN/PAH/VOCs [illegible] PFAS short suite									

Water Container Codes: [illegible]

Environmental Division
Sydney
Work Order Reference
ES2313946

985222

ALS

CHAIN OF CUSTODY

CLIENT: [illegible]
OFFICE: [illegible]
PROJECT: [illegible]
ORDER NUMBER: [illegible]
PROJECT MANAGER: [illegible] CONTACT PH: 0403 689 755
SAMPLER: [illegible] SAMPLER MOBILE: [illegible]
COC emailed to ALS? (YES / NO) EDD FORMAT (or default):
Email Reports to: [illegible]
Email Invoice to: [illegible]
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: [illegible]

TURNAROUND REQUIREMENTS: [illegible]
ALS QUOTE NO.: [illegible]
COC SEQUENCE NUMBER (Circle)

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No [✓ N/A]
Free ice / frozen ice bricks present upon receipt? [✓ Yes] No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME:	DATE/TIME:	DATE/TIME:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE	TOTAL CONTAINERS	TRH/BTEXN/PAH/VOCs	[illegible]	[illegible]	[illegible]	Manganese	[illegible]	[illegible]	[illegible]	[illegible]	
18	[illegible]	[illegible]	Water			X			X				X		
19	[illegible]	[illegible]	Water			X			X				X		
20	[illegible]	[illegible]	Water										X		
21	[illegible]	[illegible]	Water										X		
22	PB2	[illegible]	Water										X		
23	[illegible]	[illegible]	Water										X	X	
24	[illegible]	[illegible]	Water										X	X	
25	Trip blank		Water											X	
26	Trip spike		Water											X	
			Water												
			Water												
			Water												
			Water												
			Water												
			Water												
			Water												
			Water												
			Wate												

Appendix I

Asbestos Management Letter (June 2023 Hand-picking Event)

22 / 33 Darling Street
Carrington NSW 2294

PO Box 322
Newcastle, NSW 2300
t (02) 6685 7811

Mark Curran
Senior Environmental Specialist
Australian Rail Track Corporation
Dyraaba Street,
Casino NSW 2470

Via email: MCurran@ARTC.com.au

Ref: 20025.76 L03 30 June 2023

Asbestos Management – Goulburn Roundhouse
12 Braidwood Road, Goulburn NSW 2580

1.0 Introduction

Cavvanba Consulting Pty Ltd (Cavvanba) was engaged by Australian Rail Track Corporation Limited (ARTC) to conduct a site inspection and asbestos containing material (ACM) hand-picking exercise at the Goulburn Roundhouse, located at 12 Braidwood Road, Goulburn, New South Wales (NSW) 2580 (herein referred to as the site). The site location is presented on Figure 1.

This letter should be read in its entirety, including Cavvanba's *General limitations to environmental information*, included as Attachment A and the following attachments:

Figure 1: Site Location
Figure 2: Asbestos Inspection Area
Figure 3: Site Overview
Figure 4a to 4c: Asbestos Locations

Attachment A: *General limitations to environmental information*
Attachment B: Photographic Log
Attachment C: Asbestos Removal Control Plan and Disposal Documentation

1.1 Background and purpose

The site is currently used as a railway museum and actively operated as a Roundhouse by the Goulburn Locomotive Roundhouse Preservation Society Incorporated (GLRPS) for storage, restoration and maintenance of locomotives and rolling stock.

ACM has been identified on the ground surface over a large portion of the site. The highest concentrations observed are within the immediate vicinity of the Roundhouse building and within the southern portion of the site. ACM has also been identified in soil fill material which extends beyond the fenced boundary in the southern portion of the site, and is evident by the raised area in the western portion of the site, as presented on Figure 2. The findings of previous environmental investigations pertinent toa asbestos in and on soils are contained within the below reports, and it is assumed that the reader has an understanding of the broader contamination status of the site:

- *Detailed Site Investigation – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580* (Cavvanba, January 2021); and
- *Additional Environmental Site Assessment – Goulburn Roundhouse, 12 Braidwood Road, Goulburn, NSW 2580* (Cavvanba, August 2021).

An *Interim Environmental Management Plan (IEMP) – Goulburn Roundhouse* (Cavvanba, May 2023) has been prepared for the management of contamination within the site boundary. A requirement of the IEMP is to conduct routine hand-picking of ACM on a biannual basis to prevent movement of ACM and reduce the load across the site and this letter describes the first of those biannual events.

2.0 Site inspection

The inspection was undertaken on 31 May and 1 June 2023 by personnel from Cavvanba and Enviropacific Services Pty Ltd (EPS) and comprised of a structured and systematic (grid based) site walkover and ACM hand-picking exercise across the site area. The scope of the inspection is depicted on Figure 2.

EPS hold a Class A/ASA/Class B/ASB Asbestos Licence No. 211328, and were responsible for undertaking the removal of materials identified during the inspection.

Cavvanba personnel are SafeWork NSW licensed asbestos assessors (LAA), and were responsible for assessing the nature of asbestos identified and providing advice regarding the findings:

- Drew Wood – LAA01297 and
- Ben Wackett – LAA000132.

3.0 Findings

A number of fragments of potential ACM fragments were identified on the ground surface during the inspection, ranging in size and were assessed as non-friable. This included isolated areas where an individual fragment was observed and areas where multiple ACM fragments (> 1 < 50) were observed. The areas are depicted on Figures 4a and 4b and a photographic log has been provided as Attachment B. More detailed observations are described below:

- Large portions of the site were unsealed with the exception of some small sections of asphalt and concrete in the central and northern portions of the site.

- Thick grass and vegetation limited a clear visual appraisal of soils within the south-eastern corner of the site, as presented on Photograph 1.

- All ACM fragments were identified to be non-friable and generally within areas where other anthropogenic materials such as glass, metal, brick, plastic and/or timber were observed.

- Areas of ‘multiple ACM fragments’ were identified in the following areas as presented on Figures 4a and 4b:
  - south-western portion – adjacent the south-western corner of the roundhouse;
  - central-eastern portion – within the eastern portion of the roundhouse and within the vehicle parking area adjacent to the former office / fitter's amenities building;
  - southern portion – to the southwest of the Wellington Building; and
  - north-western portion – adjacent to the western side of Building 8.

Gross ACM fragments were identified on the surface in the central-eastern and southern portion of the site within the vehicle parking area, adjacent to the former office / fitter's amenities building and southwest of the Wellington Building.

Potential ACM fragments were also identified beneath rolling stock in the eastern portion of the roundhouse which were unable to be safely removed from the surface due to accessibility issues.

- There were no visible ACM fragments on the ground surface within the accessible areas assessed following the inspection and hand-picking exercise. However, ACM is present in fill material at the site. ACM will be exposed at a later date through natural erosion / weather events / mechanical disturbance. A high concentration of ACM was observed at and removed from the surface within two areas, being the vehicle parking area within the area adjacent to the former office / fitter's amenities building and the area southwest of the Wellington Building. Despite the effort made to remove the visible ACM fragments, it is likely that single ACM fragments may remain at the surface, however the concentration has been reduced to a temporarily acceptable condition and relies on the continuation of routine hand-picking.

4.0 Conclusions and recommendations

The site inspection and ACM hand-picking exercise was limited to surface soils within the site boundary, as defined on Figure 2.

A total of approximately 80 kg of ACM and potential ACM was identified within the site boundary and removed as part of the works. All fragments removed from the site were lawfully disposed of by EPS. Waste tracking documentation has been provided within Attachment C.

Higher risk areas

Areas where multiple fragments of non-friable ACM are present creates a higher risk of generating airborne fibres if disturbed. Therefore, these have been highlighted as higher risk areas, represented by blue hatching on Figures 4a and 4b. Whilst every effort was made to remove these fragments at the time of inspection, ACM is present within fill material (i.e. soils below the ground surface) and will be exposed if:

- the grass cover is removed or dies during drought / unforeseen events;
- erosion occurs, either naturally or during severe weather events;
- erosion over the natural course of 6 months; and/or
- disturbance occurs by mechanical excavation.

Therefore, areas where multiple ACM fragments have been identified, in addition to those areas previously identified (yellow hatching on Figures 4a and 4b) should be demarcated as exclusion zones in accordance with the IEMP, meaning restricting access and movements with these areas.

Lower risk areas

ACM fragments were identified in a number of isolated locations on-site , and represented by a red 'X' on Figures 4a and 4b. These fragments have been removed and the location presents a lower risk due to the incidental presence and non-friable nature. No additional management measures beyond that stipulated within the IEMP, are required for these locations.

Ongoing management

It is recommended that ACM on-site continues to be managed under the current interim environmental management plan until such time that remedial works and/or more permanent measures are in place. The IEMP includes biannual inspections and hand-picking. Cavvanba acknowledges that the presence of thick grass and vegetation limited a visual appraisal of surface soils across some portions of the site, however this also provides natural protection from erosion and discourages direct access by site personnel. Therefore, it is not recommended to change or disturb these areas, however should conditions change (i.e. removal or thinning of vegetation cover), addition inspections and hand-picking exercises are recommended.

✧ ✧ ✧ ✧

Please do not hesitate to contact the undersigned on (02) 6685-7811 should you require additional information or clarification.

Yours sincerely
Cavvanba Consulting Pty Ltd

Drew Wood
Principal Environmental Scientist
SafeWork NSW LAA (LAA001297)

SITE CONTAMINATION SPECIALIST
Financial Year 2020/2021
No. SC40952

Ben Wackett
Principal Environmental Scientist
SafeWork NSW LAA (LAA000132)

SITE CONTAMINATION SPECIALIST
Financial Year 2021/2022
No. SC41160

Figures

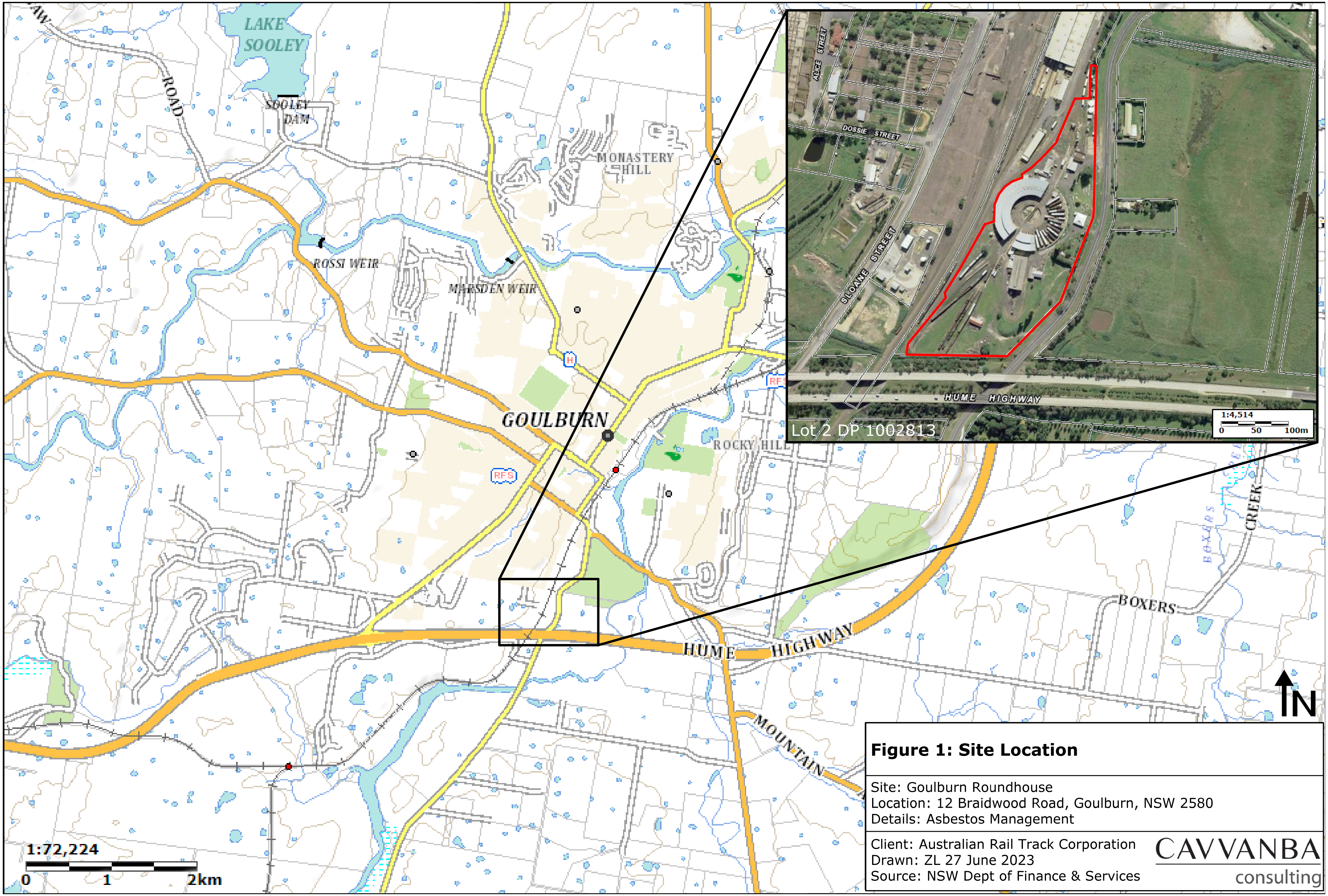


Figure 1: Site Location

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Asbestos Management

Client: Australian Rail Track Corporation
Drawn: ZL 27 June 2023
Source: NSW Dept of Finance & Services

CAVVANBA consulting

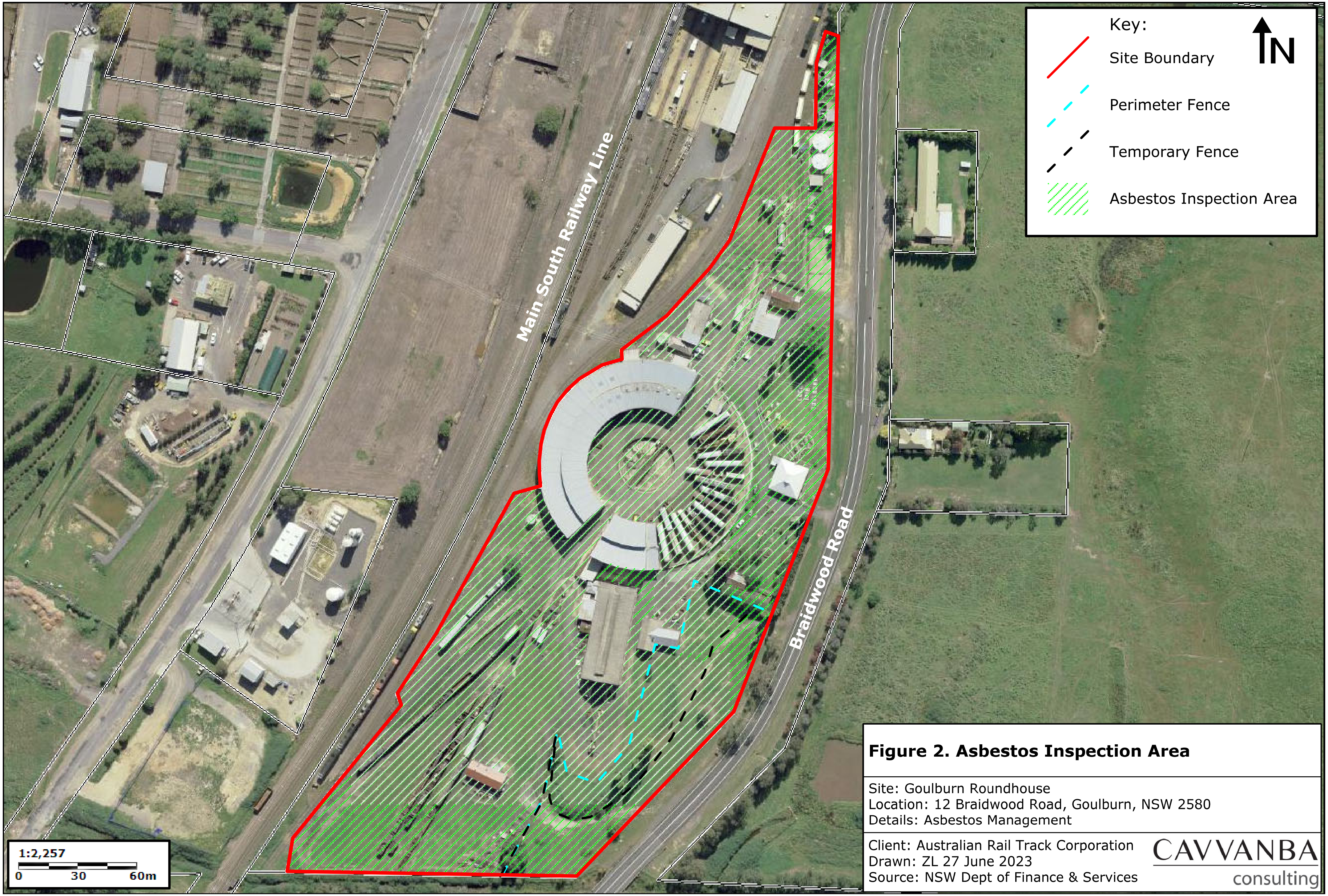
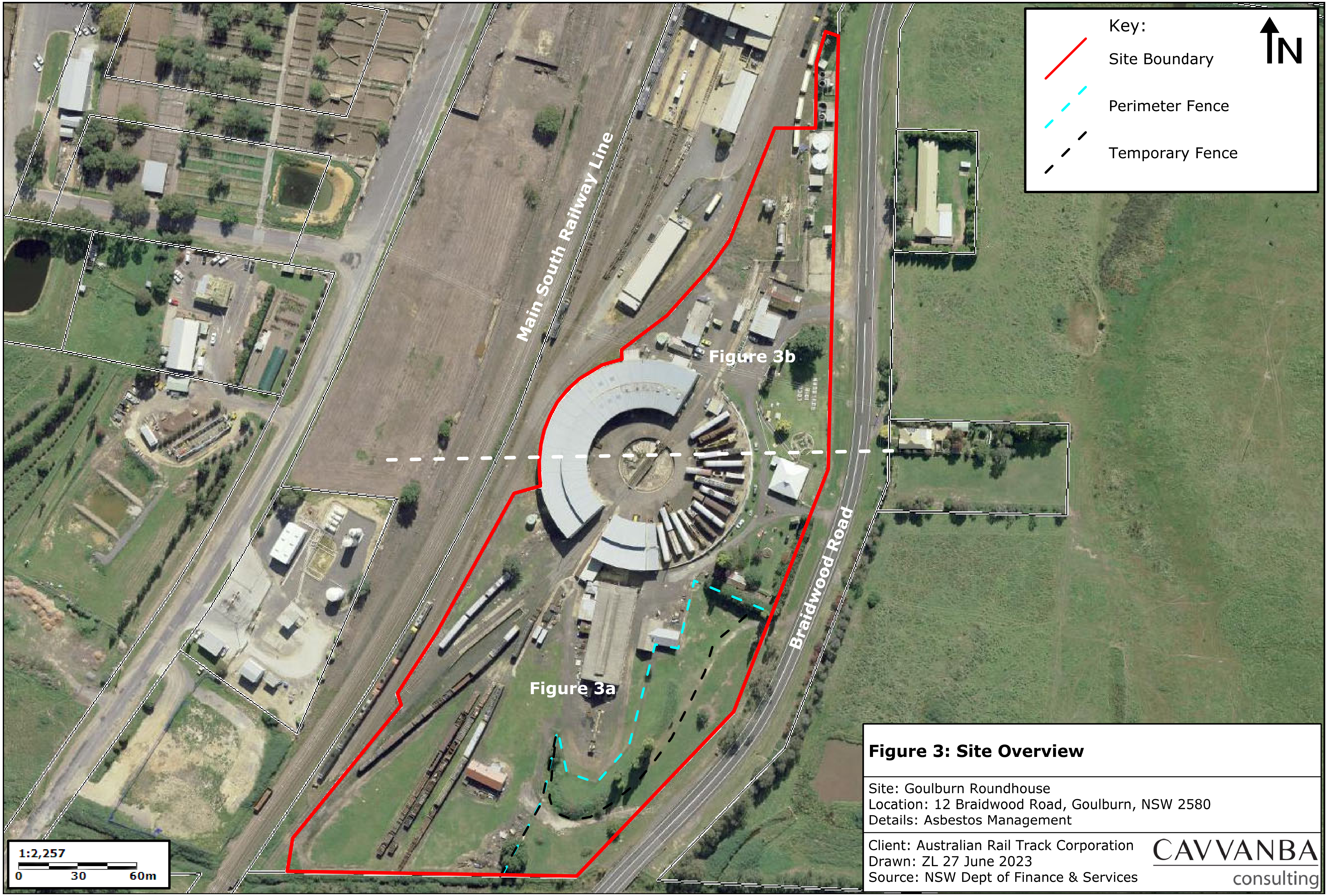


Figure 2. Asbestos Inspection Area

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Asbestos Management

Client: Australian Rail Track Corporation
Drawn: ZL 27 June 2023
Source: NSW Dept of Finance & Services

CAVVANBA consulting



Key:

Site Boundary

Perimeter Fence

Temporary Fence

Figure 3: Site Overview

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Asbestos Management

Client: Australian Rail Track Corporation
Drawn: ZL 27 June 2023
Source: NSW Dept of Finance & Services

CAVVANBA
consulting

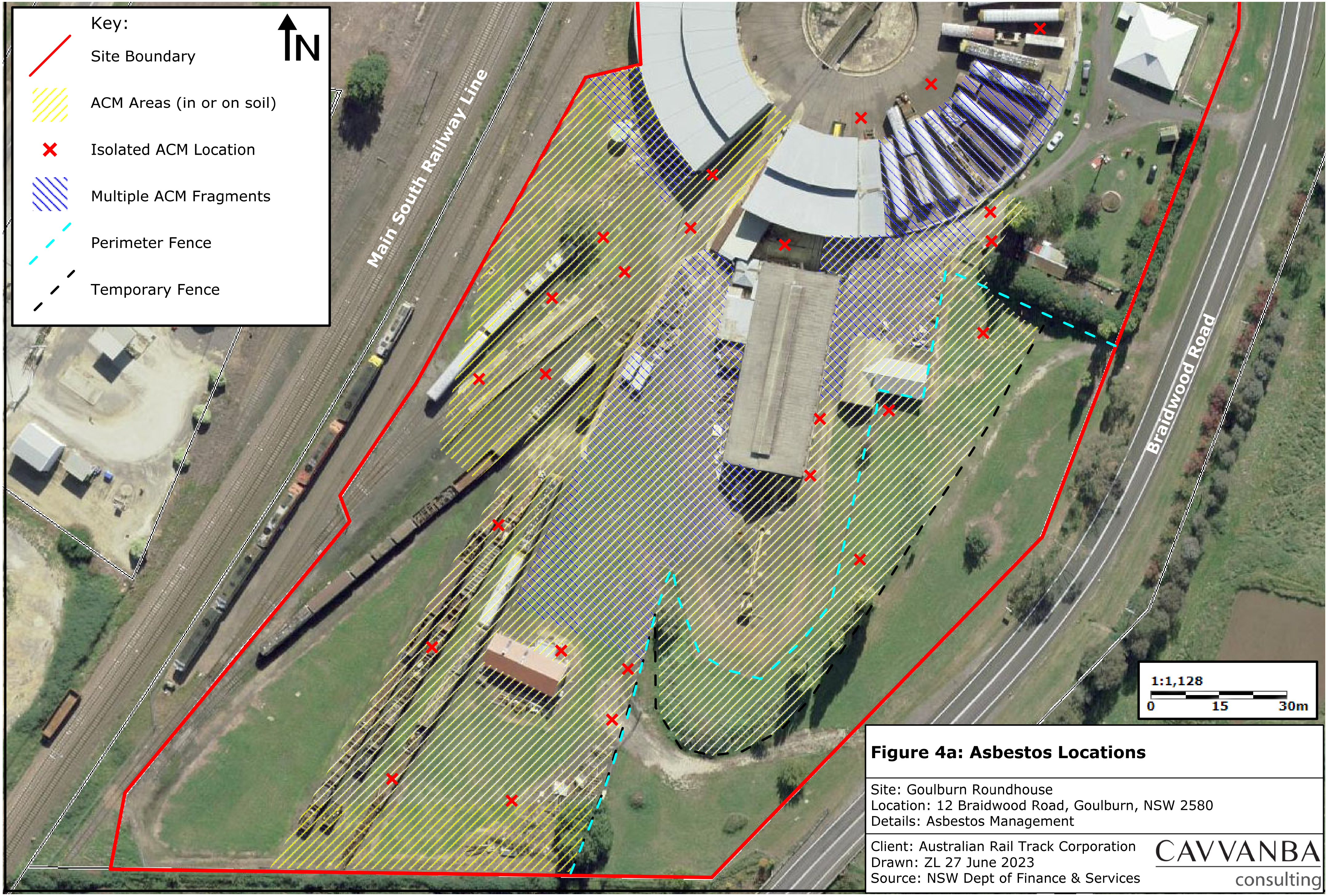


Figure 4a: Asbestos Locations

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Asbestos Management

Client: Australian Rail Track Corporation
Drawn: ZL 27 June 2023
Source: NSW Dept of Finance & Services

CAVVANBA
consulting

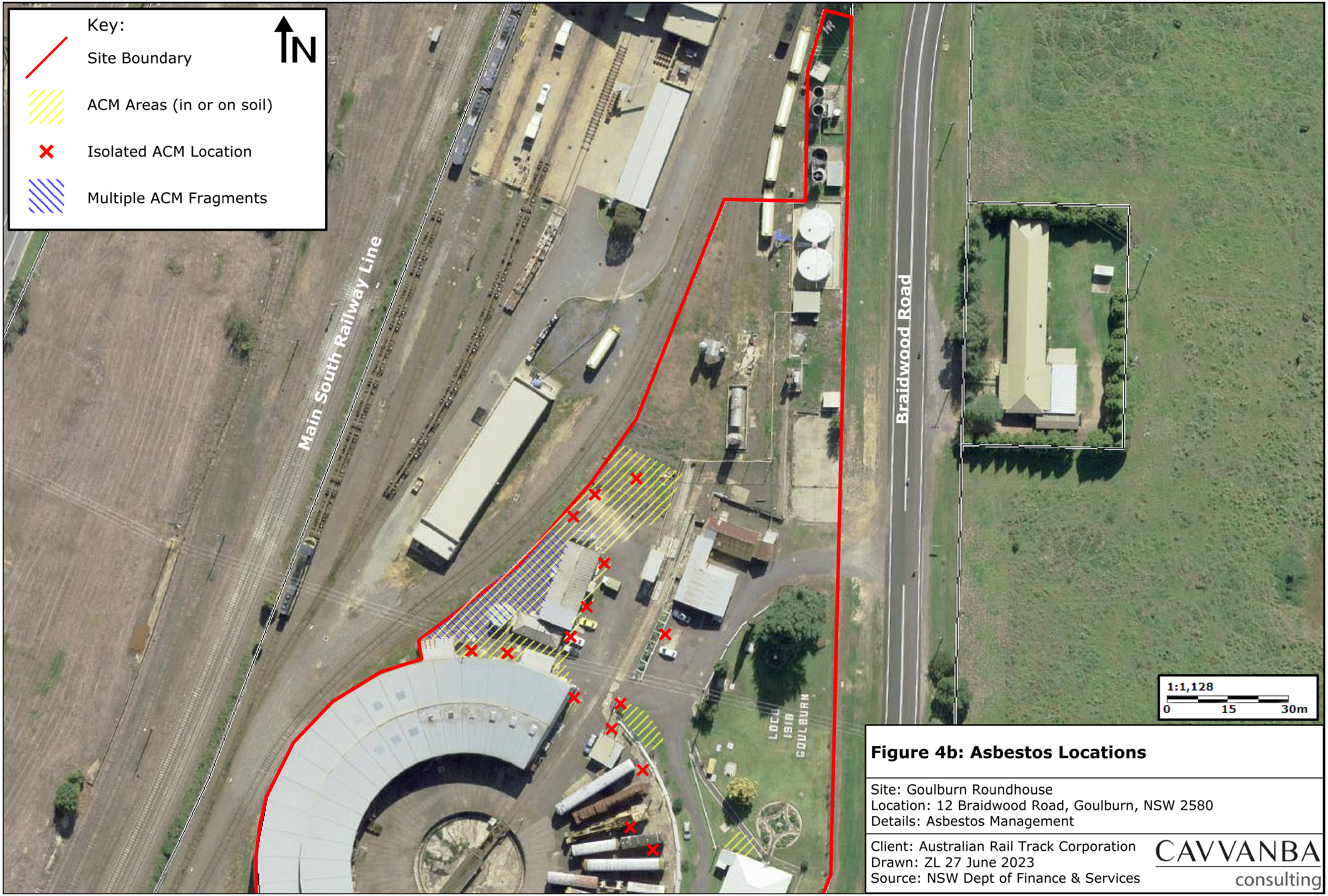


Figure 4b: Asbestos Locations

Site: Goulburn Roundhouse
Location: 12 Braidwood Road, Goulburn, NSW 2580
Details: Asbestos Management

Client: Australian Rail Track Corporation
Drawn: ZL 27 June 2023
Source: NSW Dept of Finance & Services

CAVVANBA consulting

Attachment A

General Limitations to Environmental Information

General limitations to environmental information

The findings of this reporting are based on the objectives and scope of the services provided. Cavvanba Consulting performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties or guarantees, expressed or implied, are made.

Cavvanba's review/assessment is strictly limited to identifying the environmental conditions associated with the subject property in regard to site contamination, and does not seek to provide an opinion regarding other aspects of the environment not related to site contamination, or to the suitability of the site in regard to: landuse planning and legal use of the land; and/or regulatory responsibilities or obligations (for which a legal opinion should be sought); and/or the occupational health and safety legislation; and/or the suitability of any engineering design. Reviews of such information are only in relation to the contaminated land aspects of any project or site. If specialist technical review of such documents is required, these should be obtained by an appropriate specialist.

The reporting and conclusions are based on the information obtained at the time of the assessments. Changes to the subsurface conditions may occur subsequent to the investigation described, through natural processes or through the intentional or accidental addition of contaminants, and these conditions may change with space and time.

Field monitoring, sampling and chemical analysis of environmental media and structures are based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate, based on regulatory requirements, site history, and the proposed landuse, not on sampling and analysis of all media, at all locations, for all potential contaminants.

Limited field monitoring, and environmental sampling and laboratory analyses, were undertaken as part of the investigations reviewed or conducted by Cavvanba, as described. Ground conditions, contaminants, and material types/composition can vary between sampling locations, and this should be considered when extrapolating between sampling locations. Except at each sampling location, the nature, extent and concentration of contamination is inferred only.

Furthermore, the test methods used to characterise the contamination at each sampling location are subject to limitations and provide only an approximation of the contaminant concentrations. Monitoring and chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

The absence of any identified hazardous or toxic materials at the site should not be interpreted as a warranty or guarantee that such materials do not exist at the site. Therefore, future work at the site which involves subsurface excavation or removal of structures or parts thereof, should be conducted based on appropriate management plans. These should include, *inter alia*, environmental management plans, including unexpected findings protocols, hazardous building materials management plans, and occupational health and safety plans.

If additional certainty is required, then additional site history information should be obtained, or additional exploration and sampling and analysis should be conducted. This decision should be made by the user of this information based on an appropriate risk management process, and the user should commission additional services if required.

Attachment B

Photographic Log

Photograph 1

View southeast towards the small area of overgrown vegetation near the temporary fence line.

Photograph 2

Potential ACM observed in the western portion of the site, adjacent to the roundhouse structure.

Photograph 3

View west between the existing railway sidings in the eastern portion of the roundhouse. A location where multiple potential ACM fragments were identified.

Photograph 4

View southwest towards the eastern portion of the site and the location where multiple potential ACM fragments were identified.

Photograph 5
View northeast towards the south-eastern portion of the site and the location where multiple potential ACM fragments were identified.

Photograph 6
View north towards the north-western portion of the site and the location where multiple potential ACM fragments were identified.

Photograph 7

View southwest towards a location where multiple potential ACM fragments were identified on the surface prior to collection.

Attachment C

Asbestos Removal Control Plan and Disposal Documentation

Delivery Docket

Summerhill Waste Management Centre
City of Newcastle

ABN: 25 242 068 129
Phone: 02 49856600

HOURS Mon - Fri 7.30am - 5.00pm
Sat - Sun 9.00am - 3.00pm

Ticket No: 30599267-SH
Voucher No:

Date Out: 2/06/2023 11:00:30 AM

Vehicle Rego: ERJ18A

Client: Enviropacific
Services Pty Ltd
Order Number: 2275-80KGS

Weighed Waste

Asbestos

Chargeable Weight:

Single Items	Qty	Price

GROSS Weight: 2.58t
TARE Weight: 2.48t
NET Weight: 0.10t

Total Charge Fee:
GST:

Total Price:

Payments:

Change Given:

There is a 0.75% surcharge on credit card transactions

1. PROJECT DETAILS

Project Name:	Goulburn Roundhouse Henpecking	**Project No:**	105126
Scope of work:	Henpecking bonded asbestos fragments		
Start date:	29/05/23	**Estimated finish date:**	2/06/23

2. CLIENT DETAILS

Client Name:	Cavvanba Consulting
Address:	Unit 22/23 Darling St Carrington
Client Contact:	Drew Wood
Contact Number:	0403 689 755
Email Address:	drew@cavvanba.com

3. SITE DETAILS

Address:	12 Braidwood Rd Goulburn NSW
Site Contact:	Zac Laughlan
Contact Number:	0428 288 854
Email Address:	zac@cavvanba.com

4. EMERGENCY CONTACT DETAILS

Contact Name	Contact Number
Police, Ambulance, Fire Brigade	000 for landline / 112 from mobile
Hospital	Goulburn Base Hospital – (02) 4825 4000
Electrical company	AUSGRID – 13 13 65
Water company	Goulburn Mulwaree Council – (02) 4823 4444
Telecommunications company	Telstra – 132 203
EPA (Environment line)	131 555
First Aid Officer	Hayden Coleman
Regulator	13 10 50
Police Station	Goulburn Police Station – (02) 4824 0799
Federal Safety Commission	Hotline 1800 652 500

5. REMOVALIST DETAILS

Removal type:	☐ Domestic ☒ Commercial ☐ School	☐ Public ☐ Other (please detail):	
Name of Removalist (as shown on Licence):	Enviropacific Services Ltd	Licence No:	211328

6. ENVIROPACIFIC SITE MANAGEMENT

Project Manager:	
Contact Number:	0409 323 056
Email Address:	hayden@enviropacific.com.au

Asbestos Supervisor:	Hayden Coleman
Contact Number:	0409 323 056
Email Address:	hayden@enviropacific.com.au

7. PROJECT PERSONNEL

Regional Manager:	Mitch Anthony
HSE Advisor:	Evan Kidd
Project Director:	Mitch Anthony
Project Team:	Asbestos Supervisor, Asbestos Labour

Responsibilities for assigned workers are detailed in the Enviropacific Asbestos Removal Procedure.

8. OCCUPATIONAL HYGIENIST/ASBESTOS ASSESSOR

Company Name:	Cavvamba Consulting
Contact Name:	Drew Wood
Contact Number:	0403 689 755
Email Address:	drew@cavvanba.com

9. INDEPENDENT CONTRACTORS ENGAGED

Company Name	Task
N/A	

10. PRELIMINARY CHECKLIST

	Item	Yes	No	NA
1.	Notified Regulator (i.e. SafeWork/WorkSafe) (5 days prior to the start of removal work)?	☒	☐	☐
2.	Obtained a copy of the asbestos register or a hygienist report for the workplace from the person with management or control of the workplace?	☒	☐	☐
3.	For workplaces – the person who commissioned the work has notified the workplace about the work and the date it is to commence?	☒	☐	☐
4.	Before work commences, has the licensed asbestos removalist consulted the person who commissioned the work, the PCBU, occupiers of the premises, owners of the premises and anyone occupying in the immediate vicinity of the workplace (including neighbours and other businesses) about the asbestos removal work and when it will commence?	☒	☐	☐
5.	Health monitoring records for employees and subcontractors available?	☒	☐	☐
6.	Copies of asbestos removal workers training records available?	☒	☐	☐

7.	Copy of asbestos removalist licence available?	☒	☐	☐
8.	Air monitoring arranged (mandatory for Friable)?	☐	☐	☒
9.	Project specific Safe Work Method Statement developed?	☒	☐	☐
10.	Equipment (HEPA vac / Negative-air unit / decontamination unit (filters etc.) / respirators) maintained/checked and records/logs kept (Friable only)?	☐	☐	☒

11. IDENTIFICATION OF ASBESTOS TO BE REMOVED

Type		Details (e.g. soil, roof, sheeting, board, pipe etc.)	Site location	Quantity (m^2/m^3)
☐	Friable			
☒	Non-friable	Fragments	Goulburn Roundhouse	15m2

12. OTHER HAZARDS

Hazards	Location of hazard	Controls
Heat	Weather / Fatigue	Drink breaks, fatigue management
Cold	Weather / sprains & strains	Warm up/move for life stretches before starting work
Other:		
Other:		
Other:		

13. AIR MONITORING

Is air monitoring required?	☐ Yes ☒ No

14. PERSONAL PROTECTIVE EQUIPMENT

☒	Disposable coveralls (type 5, category 3)	☐	Full face powered air purifying respirator
☒	Disposable gloves	☐	Full face respirator (airline)
☐	Booties or gumboots	☐	Respirator fit checks conducted
☒	Half face respirators (P2/disposable/cartridge)	☐	Protective eyewear
☐	Full face respirators (P3)	☐	Other:

15. BARRICADING AND SIGNAGE REQUIRED FOR SECURING AREA

☒	Asbestos warning signs	☐	Security fencing to prevent unauthorised access to removal area
☒	Barricades / safety tape	☐	Other:

16. REMOVAL METHODS

☒	Wet spray method
☐	Wrap and cut removal
☐	Soil

17. AIRBORNE ASBESTOS FIBRES CONTROL METHODS

☐	Use of non-powered tools (i.e. hammers, pinch bars, scrapers etc.) - power tools must not be used	☐	Negative air unit (mandatory for friable asbestos)

☐	Seal air vents/windows/entrances/openings	☐	Decontamination unit (mandatory for friable asbestos)
☒	Wet methods (water / PVA solution spray)	☐	Clean up debris throughout removal using either an asbestos vacuum cleaner fitted with HEPA filter and/or wet wipe
☐	No unnecessary breakage - sheets removed in whole (as far as practical)	☐	DOP testing in date
☐	Full enclosure	☒	Other: Bagging of Fragments
☐	Other:	☐	Other:

18. ENCLOSURE DETAILS (FRIABLE ONLY)

Is an enclosure required?		☐ Yes ☒ No
Provide the details of required enclosures, including size, shape, structure etc.		
☐	Number of negative pressure exhaust units:	

19. TEMPORARY BUILDINGS

Are temporary buildings required?		☐ Yes ☒ No
Details of temporary buildings required (e.g. decontamination units):		
☐	Water supply details:	
☐	Lighting and power supply details:	
☐	Negative pressure exhaust units (number):	

20. PLANT REQUIRED AND DECONTAMINATION

Plant required		Decontamination details (e.g. wet wipe, wash, dispose of asbestos waste, hygienist clearance)
☐	Mobile plant	N/A
☐	Watercart	N/A
☐	Generator	N/A
☐	Other:	

21. EQUIPMENT REQUIRED AND DECONTAMINATION

Equipment required		Decontamination details (e.g. wet wipe, wash, dispose of asbestos waste, hygienist clearance)
☐	Vacuum cleaner fitted with HEPA filter	N/A
☐	Small hand tools	N/A
☐	Other:	
☐	Other:	
Non-disposable PPE and RPE decontamination		
☒	Spray with water / wet wipe and stored in a safe place	
☐	Laundar at commercial laundry (please specify name):	
☐	Other (please specify):	

22. PERSONNEL DECONTAMINATION

☐	Full decontamination unit for friable (maybe required on some large non-friable projects)
☒	Water spray / HEPA vacuum

23. WASTE CONTAINMENT

☒	Double bagged (with 200 µm thick plastic) / twisted / taped and labelled
☐	Waste skips-double lined with heavy-duty plastic sheeting (200 µm minimum thickness) and sealed
☐	Other (please specify):

24. WASTE DISPOSAL

☐	Trucks with non-friable asbestos are covered with all weathered tarp (soil). Trucks with friable asbestos are covered with all weathered tarp and sealed (soil). **Victoria Only:** Trucks are double lined with plastic and completely sealed with tarps tied down.
☐	Asbestos waste will be covered and transported via an EPA approved/licensed carrier (please specify):
☒	Licenced asbestos disposal site (please specify): Summerhill Waste Management Facility
☒	EPA Waste Locate (over 100kg) (NSW only): Enviropacific

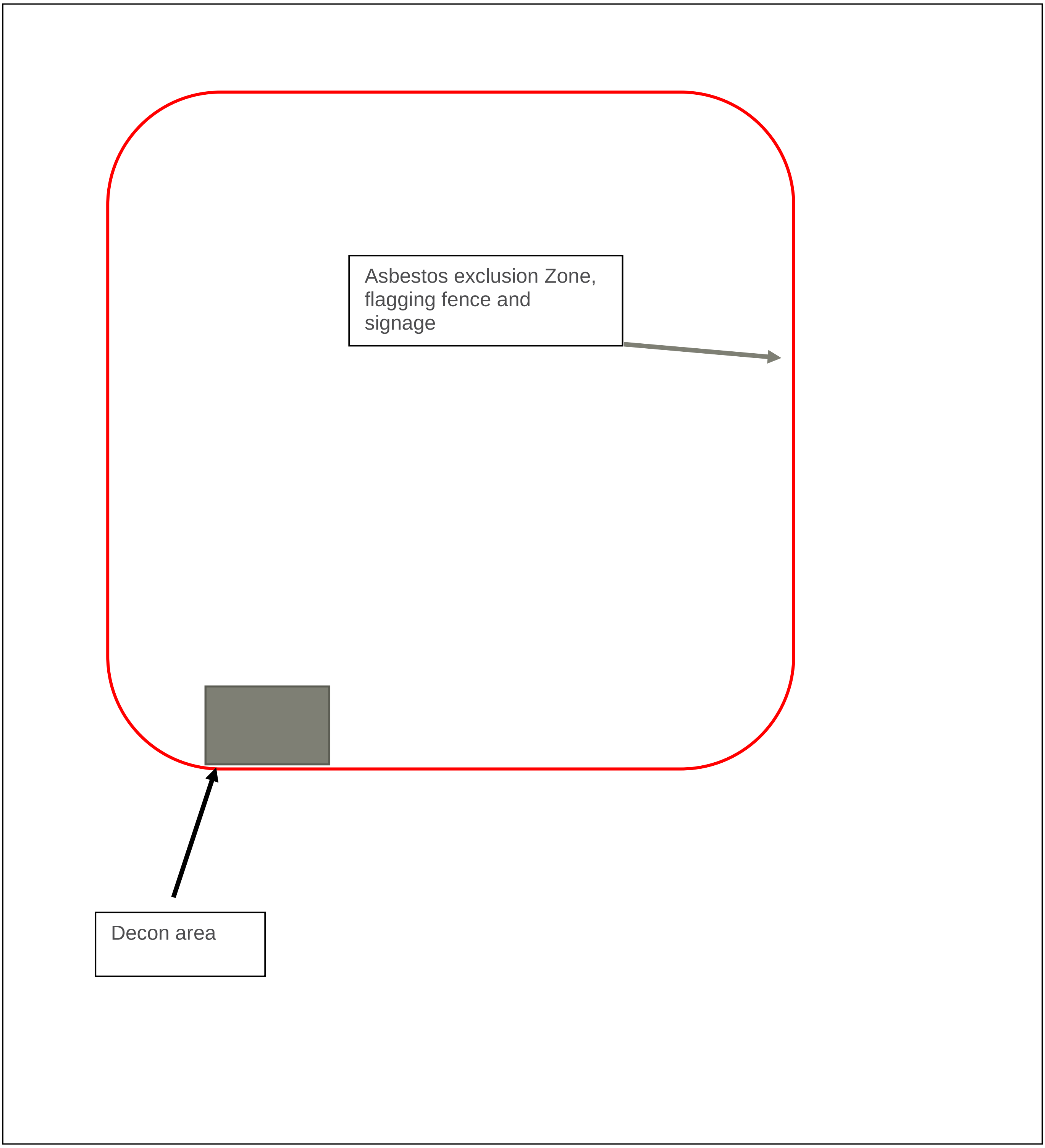
25. EMERGENCY RESPONSE PLAN

In the event of an emergency situation occurring in an asbestos area it may be necessary for emergency services or trades persons who are not asbestos qualified to enter the asbestos area.

Should such an event occur the following procedure will be followed.

1. First responder to raise alarm with Emergency Response Coordinator (Site Manager / Supervisor) and advise of situation;
2. Emergency Response Coordinator to contact Enviropacific Project Manager;
3. Enviropacific Project Manager / Site Manager to inform the client site representative;
4. First responder or other worker as required to request first aider and any other required assistance;
5. Based on the severity of the incident, Emergency Response Coordinator or delegated person to ring Emergency Services on 000 (or 112 from mobile phone). Do not hang up until you have provided requested information;
6. Emergency Response Coordinator to arrange person to meet/guide emergency service to incident site if required;
7. Emergency Response Coordinator to raise evacuation alarm if persons at risk from hazard;
8. Emergency Response Coordinator to coordinate evacuation if required. Workers to decontaminate if safe to do so;
9. Emergency Response Coordinator to account for all workers at muster point;
10. No one to attempt to rescue any person unless competent and safe to do so and using appropriate PPE;
11. Should the emergency involve a hazardous service i.e. gas or electricity, notify Enviropacific Project Manager;
12. Enviropacific Project Manager to inform the client to call appropriate provider to isolate service pending notification to Health Infrastructure of interruption of service;
13. Once area is deemed safe from hazard, asbestos workers are to re-enter to make area safe from asbestos;
14. Make the area safe for access for service provider workers to enter the area and/or trades personnel;
15. Once area has been deemed made safe by site asbestos supervisor, Emergency Services and/or trades personnel may enter area wearing appropriate PPE and under supervision of site asbestos supervisor;
16. Environmental Consultant to place air monitor to monitor asbestos content of atmosphere if/as required.

26. SITE SETUP MAP



27. SITE SETUP MAP

28. ARCP ACKNOWLEDGEMENT SHEET

I acknowledge that I understand the contents of the Asbestos Control Removal Plan (ARCP) and specific risks in relation to the asbestos works.			
Name (please print)	**Employer name**	**Signature**	**Date**