REPORT TO

HEALTH INFRASTRUCTURE

ON

DETAILED (STAGE 2) SITE INVESTIGATION

FOR

PROPOSED HOSPITAL DEVELOPMENT

AT

FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Date: 9 November 2023

Ref: E35821PRrpt3

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Executive Summary

Health Infrastructure ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed hospital redevelopment at Finley Hospital, 24 Dawe Avenue, NSW ('the site'). The purpose of the investigation is to make an assessment of site contamination. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2 attached in the appendices.

The DSI is required to inform the masterplan and design stage of the proposed hospital redevelopment. JKE note that a DSI is the second step in the contaminated land assessment process for planning approval with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021.

JKE understand that the proposed development is currently in the master planning and early design phase of the project. The proposed development will likely include additions to the existing buildings and/or new buildings constructed on the site. The development may also include refurbishment of the existing buildings. Conceptual drawings were not provided to JKE.

The primary aims of the investigation were to further characterise the site and make an assessment of the soil contamination conditions, and inform the preparation of a Remediation Action Plan (RAP), if required. The investigation included a review of historical information presented in the Preliminary Site Investigation (PSI), soil sampling from an additional 32 locations and groundwater sampling from five monitoring wells installed at the site. The site has historically been used for public recreation until circa 1960, and has been used for a hospital since.

The investigation identified asphaltic concrete (AC) pavement and/or fill soils to depths of approximately 0.2m to 1m below ground level (BGL), underlain by alluvial silty clay and silty sandy clay. The fill typically comprised of silty clay and silty clayey sand with inclusions of ash, slag, gravel, building rubble (asphalt, brick, ceramic and plastic fragments), root and root fibres. A hydrocarbon odour was noted within the fill soils in BH103 to a depth of approximately 0.6mBGL. BH103 was located within close proximity to the underground storage tanks (USTs) in the south of the site, as shown on Figure 2 attached in the appendices.

During drilling, groundwater seepage was encountered in three locations at depths of approximately 4.4m to 4.8mBGL. The standing water level (SWL) recorded in the monitoring wells installed at the site ranged from approximately 3.6m to 3.7mBGL. The surface elevations and the groundwater levels were generally consistent between the monitoring wells and the direction of groundwater flow could not be confirmed from the measured SWLs. JKE note that MW1 recorded a lower SWL prior to sampling. Considering multiple lines of evidence, the SWL measured during sampling appeared to be anomalous and not representative of the true groundwater conditions.

The DSI identified total recoverable hydrocarbons (TRHs) in soil above the human health and ecological site assessment criteria (SAC). However, the SAC selected were conservative and the concentrations detected were not considered to pose an unacceptable risk to human health and ecological receptors in the context of the proposed development.

The DSI identified USTs and odorous fill soils which may potentially pose risk to receptors. The DSI has not identified unacceptable risks that warrant remediation in our opinion. However, due to the sampling data gaps beneath buildings and due to the potential for localised impacts in the UST pit, we recommend that a RAP be prepared to provide a framework to manage the removal of the USTs and potential risks associated with contamination.

Based on the available results, and at the time of reporting, the following preliminary waste classifications are assigned:

- Fill soils (with the exception of soils and backfill sands associated with the USTs) tested as part of this investigation is assigned a preliminary classification of **General Solid Waste (non-putrescible)**;
- Natural silty clay in the vicinity of TP115 is assigned a preliminary classification of **General Solid Waste (non-putrescible)** due to the elevated TRH concentrations recorded;
- Natural silty clay and silty sandy clay (with the exception of the soil in the vicinity of TP115 and in the vicinity of the USTs) will likely meet the definition of **Virgin Excavated Natural Material (VENM)** for off-site disposal or re-use purposes; and
- The backfill sands, fill soils and natural soils in the vicinity of the USTs have not been assigned a preliminary classification as part of this investigation.

Based on the findings of the investigation, JKE is of the opinion that the site is suitable for the proposed development via implementation of a suitable RAP. The following is recommended:

- A RAP is to be prepared for the removal, remediation and validation of the USTs and associated infrastructure. The RAP is to include an unexpected finds protocol (UFP). Provisions are to be included within the RAP for additional investigation in the building footprints in the event that the current buildings are not retained, noting this would need to occur once access is available (i.e. following demolition); and
- Undertake a validation assessment documenting the works.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of this report.

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Abbreviations

Ambient Background Concentrations	**ABC**
Asphaltic Concrete	**AC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Asbestos Fines/Fibrous Asbestos	**AF/FA**
Australian Height Datum	**AHD**
Acid Sulfate Soil	**ASS**
Above-Ground Storage Tank	**AST**
Below Ground Level	**BGL**
Benzo(a)pyrene Toxicity Equivalent Factor	**BaP TEQ**
Bureau of Meteorology	**BOM**
Benzene, Toluene, Ethylbenzene, Xylene	**BTEX**
Cation Exchange Capacity	**CEC**
Contaminated Land Management	**CLM**
Contaminant(s) of Potential Concern	**CoPC**
Chain of Custody	**COC**
Conceptual Site Model	**CSM**
Development Application	**DA**
Dial Before You Dig	**DBYD**
Data Quality Indicator	**DQI**
Data Quality Objective	**DQO**
Detailed Site Investigation	**DSI**
Ecological Investigation Level	**EIL**
Ecological Screening Level	**ESL**
Environmental Management Plan	**EMP**
Excavated Natural Material	**ENM**
Environment Protection Authority	**EPA**
Environmental Site Assessment	**ESA**
Ecological Screening Level	**ESL**
Fibre Cement Fragment(s)	**FCF**
Health Investigation Level	**HIL**
Health Screening Level	**HSL**
Health Screening Level-Site Specific Assessment	**HSL-SSA**
International Organisation of Standardisation	**ISO**
JK Environments	**JKE**
Lab Control Spike	**LCS**
Light Non-Aqueous Phase Liquid	**LNAPL**
Map Grid of Australia	**MGA**
National Association of Testing Authorities	**NATA**
National Environmental Protection Measure	**NEPM**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**
Polycyclic Aromatic Hydrocarbons	**PAH**
Potential ASS	**PASS**
Polychlorinated Biphenyls	**PCB**
Per-and Polyfluoroalkyl Substances	**PFAS**
Photo-ionisation Detector	**PID**
Protection of the Environment Operations	**POEO**
Practical Quantitation Limit	**PQL**
Quality Assurance	**QA**
Quality Control	**QC**

Remediation Action Plan	**RAP**
Relative Percentage Difference	**RPD**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
Site Audit Statement	**SAS**
Site Audit Report	**SAR**
Site Specific Assessment	**SSA**
Source, Pathway, Receptor	**SPR**
Specific Contamination Concentration	**SCC**
Standard Penetration Test	**SPT**
Standing Water Level	**SWL**
Trip Blank	**TB**
Toxicity Characteristic Leaching Procedure	**TCLP**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
Virgin Excavated Natural Material	**VENM**
Volatile Organic Compounds	**VOC**
World Health Organisation	**WHO**
Work Health and Safety	**WHS**

Units

Litres	**L**
Metres BGL	**mBGL**
Metres	**m**
Millivolts	**mV**
Millilitres	**ml or mL**
Milliequivalents	**meq**
micro Siemens per Centimetre	**µS/cm**
Micrograms per Litre	**µg/L**
Milligrams per Kilogram	**mg/kg**
Milligrams per Litre	**mg/L**
Parts Per Million	**ppm**
Percentage	**%**

1 INTRODUCTION

Health Infrastructure ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed hospital redevelopment at Finley Hospital, 24 Dawe Avenue, NSW ('the site'). The purpose of the investigation is to make an assessment of site contamination. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2 attached in the appendices.

The DSI is required to inform the masterplan and design stage of the proposed hospital redevelopment. JKE note that a DSI is the second step in the contaminated land assessment process for planning approval with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021[1].

A geotechnical investigation was undertaken previously to this DSI by JK Geotechnics (JKG). The results of the geotechnical investigation are presented in a separate report (Ref: 35821YFrpt, dated 14 June 2023)[2]. This report should be read in conjunction with the JKG report.

JKE has previously undertaken a PSI at the site. A summary of this information has been included in Section 2.

1.1 Proposed Development Details

JKE understand that the proposed development is currently in the master planning and early design phase of the project. The proposed development will likely include additions to the existing buildings and/or new buildings constructed on the site. The development may also include refurbishment of the existing buildings.

Conceptual drawings were not provided to JKE. However, we anticipate that the proposed development will likely be constructed consistent with the existing levels and expect that only minor earthworks (cut/fill) would be required to accommodate the proposed development.

1.2 Aims and Objectives

The DSI aims to further characterise the site and make an assessment of the soil contamination conditions, and inform the preparation of a Remediation Action Plan (RAP), if required. The objectives of the DSI are to:

- Supplement the PSI data by completing the DSI, including investigation of the soils in accessible areas;
- Assess the potential risks posed by contamination to the receptors identified in the Conceptual Site Model (CSM);
- Provide a preliminary waste classification for off-site disposal of soil;
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

[1] *State Environmental Planning Policy (Resilience and Hazards) 2021* (NSW) (referred to as SEPP Resilience and Hazards 2021)

[2] JKG, (2023). *Report to Health Infrastructure on Geotechnical Investigation for Proposed Alterations and Additions at Finley Hospital, 24 Dawe Avenue, Finley, NSW.* (referred to as JKG report)

1.3 Scope of Work

The investigation was undertaken generally in accordance with a JKE proposal (Ref: EP58924PR) of 28 June 2023, the consultancy agreement (HI22656) and written acceptance from the client of the variation dated 2 August 2023. The scope of work included the following:

- Review of site information and site history information presented in the PSI;
- Review and update (if required) the CSM ;
- Implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)[3], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[4] and SEPP Resilience and Hazards 2021.

A list of reference documents/guidelines is included in the appendices.

[3] National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)

[4] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

2 SITE INFORMATION

2.1 Summary of Previous Investigations

2.1.1 Preliminary Site Investigation (PSI)

JKE previously prepared a PSI for the proposed hospital redevelopment at the site in 2023[5]. The scope of the PSI included a desktop review of historical information, a site walkover inspection, and soil sampling from 12 locations (BH1 to BH9 and TP10 to TP12 inclusive) as shown on the figures attached in the appendices. The site was historically used for public recreation until circa 1960, and has been used for a hospital since. Potential contamination sources identified at the site and the immediate surrounds included:

- Historic filling activities;
- Underground storage tanks (USTs) present within the site;
- Use of pesticides;
- Hazardous building materials present within existing and/or former structures;
- On-site generator and associated fuel storage; and
- Maintenance workshop/gardeners shed and associated flammable good store.

The PSI identified fill (i.e. historically imported or placed soils) to depths of approximately 0.2m to 0.8m below ground level (BGL), underlain by sandy, silty and clayey alluvial soils. Groundwater seepage was encountered in boreholes BH2 to BH5 inclusive at depths of approximately 3.5m to 4.5mBGL. On completion of auger drilling, the standing water levels (SWLs) in the boreholes were measured to range from approximately 3.8m to 4.8mBGL. The fill typically comprised silty sand, sandy and/or clayey silt and silty clay with inclusions of ash, gravel and root fibres. No stained or odorous fill soils were encountered.

The PSI identified fill soils at one location impacted by hydrocarbons (total recoverable hydrocarbons – TRHs) at concentrations that were above the adopted site assessment criteria (SAC).

The PSI did not identify contamination that would preclude the proposed development and a trigger for remediation was not identified. The following was recommended:

- Undertake a DSI to better assess the risks associated with the areas of environmental concern (AEC)/potential sources of contamination and to assess whether remediation is required; and
- If required (based on the findings of the DSI), a RAP is to be prepared. Any requirements documented in a RAP are to be implemented and the site is to be remediated and validated.

2.1.2 Other Reports Reviewed by JKE

As part of the historical information review for the PSI, JKE also reviewed the following reports:

- Hazardous building materials (hazmat) survey, prepared by Environmental and Safety Professionals (ESP) in 2015[6];
- A due diligence report, prepared by Northrop Consulting Engineers in 2022[7]; and

[5] JKE, (2023a). *Report to Health Infrastructure on Preliminary (Stage 1) Site Investigation for Proposed Alterations and Additions at Finley Hospital, 24 Dawe Avenue, Finley, NSW.* (Referred to as PSI)

[6] Environmental and Safety Professionals, (2015). *Report for Murrumbidgee LHD Asset Services. Hazardous Materials Survey: Finley Hospital, 23 Dawe Street, Finley NSW 2713*. (Ref: J30414)

[7] Northrop Consulting Engineers, (2022). *Finley Hospital – Site Due Diligence Report* (Ref: SU221522-01-MD-1, Revision 2)

- An Aboriginal heritage due diligence assessment, prepared by NGH in 2023[8].

The hazmat survey identified friable asbestos materials within the main hospital building and bonded/non-friable asbestos materials (i.e. ACM) within several buildings across the site. Synthetic mineral fibres (SMF) were identified in all buildings and potential polychlorinated biphenyls (PCBs) containing capacitors were noted in the lift shaft work area. Ozone depleting substances were identified in three air conditioning and refrigerant systems on the site. Lead-based paint systems were not identified on the site. JKE noted that the version of the report supplied only included odd-numbered pages and was therefore incomplete.

The due diligence report identified the following:
- Friable asbestos was identified in the boiler room and was considered to be 'medium' risk. ESP recommended the asbestos was managed under an asbestos management plan (AMP) and should be removed as soon as practicable; and
- Bonded/non-friable asbestos was identified in the health services, community health, staff accommodation, gardener's shed and mortuary buildings and was generally considered to be 'low' risk. ESP recommended management of the asbestos under a suitable AMP.

The Aboriginal heritage due diligence assessment considered it was unlikely that Aboriginal heritage objects or areas of archaeological potential were present within the site and recommended the development could proceed with caution.

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner (certificate of title):	Health Administration Corporation
Site Address:	24 Dawe Avenue, Finley, NSW
Lot & Deposited Plan:	Lot 246 in DP1016411
Current Land Use:	Hospital
Proposed Land Use:	Hospital
Local Government Authority:	Berrigan Shire Council
Current Zoning:	RU5: Village
Site Area (m^2) (approx.):	20,000
RL (AHD in m) (approx.):	108-109
Geographical Location (decimal degrees) (approx.):	Latitude: -35.641713 Longitude: 145.568239

[8] NGH Pty Ltd, (2023). *Aboriginal Heritage Due Diligence Assessment; Finley Hospital Redevelopment*. (Ref: 22-611, draft issued 31 January 2023)

Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2

2.3 Site Description Summary

The site is located in a predominantly residential area of Finley and is bound by Dawe Avenue to the North and Scoullar Street to the south. The site is located approximately 1km to the south-west of Finley Lake (a man-made lake). The regional topography is characterised by a typical flood plain with near level topography. The site itself has similar topography as the surround with near level terrain.

A walkover inspection of the site was undertaken by JKE on 11 May 2023 for the PSI. The site remained generally unchanged since the PSI. a summary of the key observations is provided below:

- Several single-storey buildings of brick and fibre cement construction with metal roofing were observed across the site;
- A stand-alone garage/shed of metal sheet construction was located in the west of the site and several metal carport and shade structures were observed across the site;
- A crescent-shaped asphaltic concrete (AC) paved driveway provided vehicular ingress/egress from Dawe Avenue. A second AC driveway extended in a southerly direction along the western site boundary from Dawe Avenue which provided vehicular access to the neighbouring property. AC pavement connected these two driveways and was used for ambulance transfers;
- A gravel driveway was located in the south of the site, extending north-westerly from the south-eastern corner of the site. A gravel carpark was also located in the south of the site;
- Minor quantities of paints, fuel, solvents (mineral turpentine), lubricants and grease were typically stored within the maintenance building (see Figure 2). The products were stored in appropriate containers;
- Two USTs were observed to the west of the maintenance shed and there was a generator to the north-east of the USTs (see Figure 2). JKE was advised by hospital staff that the USTs were no longer in use, though previously contained fuel oil for the on-site boilers;
- Mature native trees (approximately 5m in height) were observed in the north, east and south-east of the site. Flowering plants in formed gardens and shrubbery were observed in the north of the site near the main hospital entrance, and within the west of the site. The vegetation appeared to be generally healthy based on a cursory inspection; and
- Sensitive environments such as wetlands, ponds, creeks or extensive areas of native vegetation were not observed on site or in the immediate surrounds.

Selected site photographs were obtained during the course of the DSI are attached in the appendices.

During the site inspection, JKE observed the following land uses in the immediate surrounds:

- North – Dawe Avenue, with low-density residential and agricultural land use beyond;
- South – Scoullar Street with low-density residential and retirement living (Alumuna) beyond;

- East – Diggers Park (recreational space) with Donaldson Street and low-density residential beyond; and
- West – residential care facility and medical centre (Finley Regional Care), with Hamilton Street and agricultural land use beyond.

JKE did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site.

2.4 Local Meteorology

Key meteorological data for the Deniliquin Visitor Centre weather station (approximately 55km to the west of the site) available on the Bureau of Meteorology (BOM)[9] website has been reviewed and JKE note the following:

- The highest mean rainfall occurs in June, with a total of 39.5mm;
- The lowest mean rainfall occurs in February, with a total of 27.5mm; and
- In the week leading up to the DSI field work, a total of 5mm of rainfall was recorded.

[9] http://www.bom.gov.au/climate/averages/tables/cw_074128.shtml visited on 30 October 2023

2.5 Summary of Geology and Hydrogeology

2.5.1 Regional Geology

Regional geological information presented in the PSI indicated that the site is underlain by alluvial floodplain deposits, which typically consists of silt, very fine to medium-grained lithic to quartz rich sand and clay.

2.5.2 Acid Sulfate Soil (ASS) Risk and Planning

Acid sulfate soil (ASS) risk and planning information presented in the PSI indicated that the site is not located within an ASS risk area.

2.5.3 Hydrogeology

Hydrogeological information presented in the PSI indicated that:

- The subsurface conditions at the site consist of moderate to high permeability (alluvial) soils overlying relatively deep bedrock. Abstraction and use of groundwater at the site or in the immediate surrounds may be viable under these conditions, however the use of groundwater is not proposed as part of the development as far as we are aware. There is a reticulated water supply in the area and consumption of groundwater is not expected to occur. JKE note that groundwater may be used in the vicinity of the site for irrigation purposes;
- The nearest functioning borehole was located approximately 160m to the east of the site. This bore is located within a residential property and is assumed to be used for irrigation purposes; and
- Considering the local topography, surrounding land features and groundwater observations presented in the JKG report, JKE anticipate groundwater to flow towards the south.

2.5.4 Water Bodies

The closest surface water body is Finley Lake, located approximately 1km to the north-east of the site. This is inferred up-gradient of the site. This water body is man-made and it is unknown whether there is any hydraulic connectivity between the lake and the aquifer.

The nearest natural surface water body is the Tuppal Creek, located approximately 12km to the south-west of the site. Due to the distance from the site, this water body is not considered to be a receptor.

3 SUMMARY OF SITE HISTORY INFORMATION

A time line summary of the historical land uses and activities is presented in the following table. The information presented in the table is based on a weight of evidence assessment of the site history documentation and observations made by JKE during the PSI and over the course of the DSI.

Table 3-1: Summary of Historical Land Uses / Activities

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
Prior to 1897	Public recreation (vacant land).	Agricultural (crops and grazing), public recreation and low-density residential.
1897 – c1960	Land dedicated for public recreation (race course). The aerial historical photographs indicate that land clearing/construction of a dedicated race course did not occur within the site. 1955: The dedication of land for a race course was revoked.	
c1960 to date	Hospital and associated activities. Possible filling/importation of materials.	

4 CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

A review of the CSM in relation to source, pathway and receptor (SPR) linkages has been undertaken as part of the Tier 1 risk assessment process, as outlined in Section 9.

4.1 Potential Contamination Sources/AEC and CoPC

The potential contamination sources/AEC and CoPC are presented in the following table:

Table 4-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
Fill material – The site has been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated, or the material could have been 'site won' and placed during minor earthworks required for regrading paved areas or prior to construction of buildings. The PSI identified filling to depths of approximately 0.2mBGL to 0.8mBGL (fill depths are shown on Figure 2). The fill contained inclusions of ash and gravel.	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), PAHs, organochlorine pesticides (OCPs), organophosphate pesticides (OPPs) PCBs and asbestos.
Fuel storage – Two USTs were identified at the site (see Figure 2). The USTs were historically used to store fuel oil for the boilers at the site.	TRH, BTEX and PAHs.
Maintenance Workshop/Gardeners Shed – The site includes a maintenance workshop/gardeners shed and a flammable goods store (see Figure 2). It is possible that leaks/spills and/or releases of oils, solvents and fluids (e.g. turpentine/mineral spirits associated with typical painting activities, rather than chlorinated compounds) may have occurred.	Heavy metals, TRHs and PAHs.
On-site Generator – A back-up generator was observed to the east of the plant room of the main hospital building (see Figure 2). The generator appeared to be self-contained. Minor leaks and/or spills of fuel/oils may have occurred during maintenance and/or use.	TRH, BTEX and PAHs.
Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site.	Heavy metals and OCPs.

Source / AEC	CoPC
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition (renovation) activities. These materials have previously been identified in the existing buildings/ structures on site.	Asbestos, lead and PCBs.

4.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 4-2: CSM

Potential mechanism for contamination	The potential mechanisms for contamination are most likely to include 'top-down' impacts, spills and subsurface release. Subsurface release relates to the USTs.
Affected media	For the DSI, soil and groundwater have been identified as the potentially affected media. The need to assess soil vapour will depend on the initial assessment of the soil and groundwater conditions.
Receptor identification	Human receptors include site occupants/users (including adults and children) in a healthcare setting, construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users (in residential and retirement living setting) and groundwater users (recreation/irrigation use). Ecological receptors include terrestrial organisms and plants within unpaved and landscaped areas.
Potential exposure pathways	Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX), and primary/secondary contract with groundwater for irrigation. The potential for exposure would typically be associated with the construction and excavation works, future use of the site, or groundwater use associated with the use of bore water. Potential exposure pathways for ecological receptors include primary/direct contact and ingestion. Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the buildings (from soil or groundwater contamination); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and • Contact with groundwater during construction and/or migration of groundwater off-site into areas where groundwater is being utilised as a resource (i.e. for irrigation).
Presence of preferential pathways for contaminant movement	Major services (i.e. on the 'Before You Dig Australia' [BYDA] plans) were not identified that would be expected to act as preferential pathways for contamination migration. However, it is noted that localised services exist that are not shown on those plans and the details of such services must be reviewed/considered in further detail in the event mobile contamination is identified.

5 SAMPLING, ANALYSIS AND QUALITY PLAN

5.1 Summary of SAQP

JKE prepared a stand-alone SAQP[10] for the DSI which is attached in the appendices. The SAQP can be summarised as follows:

- Data Quality Objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2 of this report;
- Soil samples were obtained from 32 additional locations (BH/TP101 to BH/TP132 inclusive), generally spread across the site, as shown on the attached Figures 2 and 3;
- A grid-pattern overlay was prepared for the site and locations were judgementally selected from within each grid, depending on access/disruption factors, underground services etc. The sampling locations were set out using a hand-held GPS (with an accuracy of ±5m);
- Soil samples were obtained using a combination of a track-mounted excavator, a track-mounted drill rig (spiral auger and SPT sampling methods) and hand tools;
- Soil samples were obtained between 19 and 22 September 2023;
- Three groundwater monitoring wells were installed in BH101 (MW101), BH103 (MW103) and BH104 (MW104) during the DSI. Two monitoring wells were installed previously by JKG in BH1 (MW1) and BH3 (MW3). The well locations are shown on the attached Figures 2 and 3. MW103 was targeted in close proximity to the location of the disused USTs, and MW104 was targeted in close proximity to the location of the current back-up generator. The remaining wells were generally positioned to provide spatial coverage of the site;
- The monitoring well construction details are documented on the respective borehole logs attached in the appendices;
- The monitoring wells were developed on 20 September 2023 using a combination of a submersible electric pump and disposable bailers. MW1, MW3, MW103 and MW104 were pumped until effectively dry. MW101 was developed until steady state conditions were achieved;
- The monitoring wells were allowed to recharge for approximately six days after development. Groundwater samples were obtained from all monitoring wells using low flow sampling techniques on 26 September 2023;
- The field monitoring records and calibration data are attached in the appendices; and
- Soil and groundwater samples were submitted to NATA accredited laboratories for analysis.

5.2 Deviations to the SAQP

The deviations to the SAQP are outlined below:

- The intention was to select soil samples for analysis for pH, cation exchange capacity (CEC) and clay content based on the results of the initial round of analysis. These parameters are used to adjust ecological SAC based on soil-specific parameters. Due to the length of the field work program and the short holding times for some of these analytes, representative natural soil samples were selected to provided spatial coverage of the site and to establish average values for each parameter. JKE note that

[10] JKE, (2023b). *Report to Health Infrastructure on Sampling, Analysis and Quality Plan (SAQP) for Detailed (Stage 2) Site Investigation (DSI) at Finley Hospital, 24 Dawe Avenue, Finley, NSW*. (Referred to as SAQP)

the holding time for pH was exceeded and is discussed further in the Data Quality Evaluation presented in the appendices;

- The intention was to select the groundwater SAC for vapour intrusion based on the measured depth to groundwater during sampling. However, considering multiple lines of evidence, the SWL measured in MW1 during sampling was considered to be anomalous. Therefore, the SWL measured during development was adopted as the depth to groundwater for MW1. JKE note that this resulted in a more sensitive SAC being selected; and
- The SAQP did not provide details on how groundwater RLs were to be established. The relative heights of the groundwater monitoring well locations were interpolated based on the provided survey to establish approximate surface RLs of the monitoring wells. The SWLs were then subtracted from the inferred surface RLs to establish approximate groundwater levels relative to the Australian Height Datum (AHD).

Reference should be made to the SAQP attached in the appendices for further information. The above deviations to the SAQP are not likely to impact on the findings of the DSI.

5.3 Laboratory Details

Samples were analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 5-1: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	334225 and 334243
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	39961 and 39962

6 SITE ASSESSMENT CRITERIA (SAC)

The SAC were derived from the NEPM 2013 and other guidelines as discussed in the following sub-sections. The guideline values for individual contaminants are presented in the attached report tables and further explanation of the various criteria adopted is provided in the appendices.

6.1 Soil

Soil data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013) as outlined below.

6.1.1 Human Health

- Health Investigation Levels (HILs) for a 'residential with accessible soils' exposure scenario (HIL-A) HIL-A were selected as a conservative measure due to the extent of landscaping/unsealed areas and the limited information regarding potential development details;
- Health Screening Levels (HSLs) for a 'low-high density residential' exposure scenario (HSL-A & HSL-B). HSLs were calculated based on conservative assumptions including a 'sand' type and a depth interval of 0m to 1m;
- HSLs for direct contact presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)[11]; and
- Asbestos was assessed against the HSL-A criteria in soil and as present or absent in FCF. A summary of the asbestos criteria is provided in the table below:

Table 6-1: Details for Asbestos SAC

Guideline	Applicability
Asbestos in Soil	The HSL-A criteria will be adopted for the assessment of asbestos in soil. The SAC adopted for asbestos are derived from the NEPM 2013 and based on the Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2021)[12]. The SAC include the following: • No visible asbestos at the surface/in the top 10cm of soil; • <0.01% w/w bonded asbestos containing material (ACM) in soil; and • <0.001% w/w asbestos fines/fibrous asbestos (AF/FA) in soil. Concentrations for bonded ACM concentrations in soil are based on the following equation which is presented in Schedule B1 of NEPM (2013): $\textbf{\% w/w asbestos in soil} = \dfrac{\textbf{\% asbestos content x bonded ACM (kg)}}{\text{Soil volume (L) x soil density (kg/L)}}$ However, we are of the opinion that the actual soil volume in a 10L bucket varies considerably due to the presence of voids, particularly when assessing cohesive soils. Therefore, each bucket sample was weighed using electronic scales and the above equation was adjusted as follows (we note that the units have also converted to grams):

[11] Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - *Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document*

[12] Western Australian (WA) Department of Health (DoH), (2021). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. (referred to as WA DoH 2021)

Guideline	Applicability
	% w/w asbestos in soil = % asbestos content x bonded ACM (g) / Soil weight (g)

$$\text{\% w/w asbestos in soil} = \frac{\text{\% asbestos content x bonded ACM (g)}}{\text{Soil weight (g)}}$$

6.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for an 'urban residential and public open space' (URPOS) exposure scenario. These have only be applied to the top 2m of soil as outlined in NEPM (2013). The criterion for benzo(a)pyrene has been increased from the value presented in NEPM (2013) based on the Canadian Soil Quality Guidelines[13];
- ESLs were adopted based on the soil type; and
- EILs for selected metals were calculated using site specific soil parameters for pH, CEC and clay content. Representative soil samples were analysed and the arithmetic average of the parameters were calculated (pH of 8.5, CEC of 11.5cmolc/kg and 37% clay content). These data were used to select the added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013), and published ambient background concentration (ABC) presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)[14]. This method is considered to be adequate for the Tier 1 screening.

6.1.3 Management Limits for Petroleum Hydrocarbons

Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) were considered.

6.1.4 Waste Classification

Data for the waste classification assessment were assessed in accordance with the Waste Classification Guidelines, Part 1: Classifying Waste (2014)[15] as outlined in the following table:

Table 6-2: Waste Categories

Category	Description
General Solid Waste (non-putrescible)	• If Specific Contaminant Concentration (SCC) ≤ Contaminant Threshold (CT1) then Toxicity Characteristics Leaching Procedure (TCLP) not needed to classify the soil as general solid waste; and • If TCLP ≤ TCLP1 and SCC ≤ SCC1 then treat as general solid waste.
Restricted Solid Waste (non-putrescible)	• If SCC ≤ CT2 then TCLP not needed to classify the soil as restricted solid waste; and • If TCLP ≤ TCLP2 and SCC ≤ SCC2 then treat as restricted solid waste.
Hazardous Waste	• If SCC > CT2 then TCLP not needed to classify the soil as hazardous waste; and • If TCLP > TCLP2 and/or SCC > SCC2 then treat as hazardous waste.

[13] Canadian Council of Ministers of the Environment, (1999). *Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)* (referred to as the Canadian Soil Quality Guidelines)

[14] Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4*. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission.

[15] NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

Category	Description
Virgin Excavated Natural Material (VENM)	Natural material (such as clay, gravel, sand, soil or rock fines) that meet the following: • That has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial mining or agricultural activities; • That does not contain sulfidic ores or other waste; and • Includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved from time to time by a notice published in the NSW Government Gazette.

6.2 Groundwater

Groundwater data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013), following an assessment of environmental values in accordance with the Guidelines for the Assessment and Management of Groundwater Contamination (2007)[16]. Environmental values for the DSI include human uses (incidental contact and recreational water use), and human-health risks in non-use scenarios (vapour intrusion). Though the CSM did not identify ecological groundwater receptors (aquatic ecosystems), the data will be compared to ecological criteria for completeness and a discussion of any SAC exceedances will be provided in the Tier 1 risk assessment.

6.2.1 Human Health

- HSLs for a 'low-high density residential' exposure scenario (HSL-A/HSL-B). HSLs were calculated based on the soil type and the observed depth to groundwater; and
- The Australian Drinking Water Guidelines 2011 (updated 2021)[17] were multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. with bore water used for irrigation). These have been deemed as 'recreational' SAC.

6.2.2 Environment (Ecological - aquatic ecosystems)

Groundwater Investigation Levels (GILs) for 95% protection of freshwater species were adopted based on the Default Guideline Values in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)[18]. The 99% trigger values were adopted where required to account for bioaccumulation. Low and moderate reliability trigger values were also adopted for some contaminants where high-reliability trigger values don't exist.

[16] NSW Department of Environment and Conservation, (2007). *Guidelines for the Assessment and Management of Groundwater Contamination.*

[17] National Health and Medical Research Council (NHMRC), (2021). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

[18] Australian and New Zealand Governments (ANZG), (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (referred to as ANZG 2018)

7 RESULTS

7.1 Summary of Data (QA/QC) Evaluation

The data evaluation is presented in the appendices. In summary, JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

7.2 Subsurface Conditions

A summary of the subsurface conditions encountered during the investigation is presented in the following table. Reference should be made to the borehole and test pit logs attached in the appendices for further details.

Table 7-1: Summary of Subsurface Conditions

Profile	Description
Pavement	AC pavement was encountered at the surface in BH101 to BH103 and BH105. The pavement ranged in thickness from approximately 20mm to 100mm.
Fill	Fill was encountered at the surface or beneath the pavement in all boreholes and extended to depths of approximately 0.2m to 1mBGL. TP107 was terminated in the fill at a maximum depth of approximately 0.9m due to an obstruction (i.e. underground services). The fill typically comprised silty clay and silty clayey sand with inclusions of ash, slag, gravel, building rubble (asphalt, brick, ceramic and plastic fragments), roots and root fibres. A surficial gravel layer (i.e. road base) was encountered at the surface in BH122 and extended to a maximum depth of 0.1mBGL. A hydrocarbon odour was noted within the fill soils in BH103, to a depth of approximately 0.6mBGL. JKE note that BH103 was located within close proximity to the USTs in the south of the site.
Natural Soil	With the exception of TP107, alluvial silty clay and silty sandy clay was encountered in all boreholes and test pits and extended to maximum terminal depth of the investigation at approximately 6mBGL.
Bedrock	Bedrock was not encountered during the investigation.
Groundwater	Groundwater seepage was encountered in BH101, BH103 and BH104 at depths of approximately 4.4m to 4.8mBGL. All other boreholes and test pits remained dry on completion of drilling/excavation and a short time after.

7.3 Field Screening

A summary of the field screening results is presented in the following table:

Table 7-2: Summary of Field Screening

Aspect	Details
PID Screening of Soil Samples for VOCs	PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. The results ranged from 0.1ppm to 25.2ppm equivalent isobutylene. These results indicate that relatively low concentrations of PID detectable VOCs were detected in the samples. The highest PID concentrations were in BH103 and correlated with the minor hydrocarbon odours at this location. Samples with elevated PID readings were analysed for TRH and BTEX.
Bulk Screening for Asbestos	The bulk field screening results are summarised in the attached report Table S5. All asbestos results were below the SAC. No ACM was visibly identified within the screened samples.
Groundwater Depth & Flow	Groundwater seepage was encountered in boreholes BH101, BH103 and BH104 during drilling at depths of approximately 4.4m to 4.8mBGL. SWLs measured in the monitoring wells installed at the site ranged from approximately 3.6 to 3.7mBGL. Groundwater RLs calculated on these measurements ranged from approximately 105mAHD to 105.2mAHD. The groundwater levels were generally consistent between the monitoring wells and the direction of flow could not be confirmed from the measured SWLs. JKE note that MW1 recorded a lower SWL prior to sampling. Considering multiple lines of evidence, the SWL measured during sampling appeared to be anomalous and not representative of the true groundwater conditions.
Groundwater Field Parameters	Field measurements recorded during sampling were as follows: - pH ranged from 6.12 to 6.61; - EC ranged from 1,443µS/cm to 15,916µS/cm; - Eh ranged from -4.6mV to 239.4mV; and - DO ranged from 0.4ppm to 2ppm. JKE note that the EC recorded in MW1 was approximately 5-10x greater than all other EC results. It is also noted that the groundwater was observed to have a bubbly/soapy characteristic on the well development field sheet. This is considered to be associated with impacts from soap/detergents in grey water. This has been discussed further in the tier 1 risk assessment.
LNAPLs petroleum hydrocarbons	Phase separated product (i.e. LNAPL) were not detected using the interphase probe during groundwater sampling.

7.4 Soil Laboratory Results

The soil laboratory results were assessed against the SAC presented in Section 6.1. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented below:

7.4.1 Human Health and Environmental (Ecological) Assessment

Table 7-3: Summary of Soil Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	48	13	0	NSL	-
Cadmium	48	<PQL	0	NSL	-
Chromium (total)	48	40	0	0	-
Copper	48	160	0	0	-
Lead	48	75	0	0	-
Mercury	48	0.5	0	NSL	-
Nickel	48	29	0	0	-
Zinc	48	120	0	0	-
Total PAHs	48	2	0	NSL	-
Benzo(a)pyrene	48	0.4	NSL	0	-
Carcinogenic PAHs (as BaP TEQ)	48	0.6	0	NSL	-
Naphthalene	48	<PQL	0	NSL	-
DDT+DDE+DDD	17	<PQL	0	NSL	-
DDT	17	<PQL	NSL	0	-
Aldrin and dieldrin	17	1.2	0	NSL	-
Chlordane	17	<PQL	0	NSL	-
Heptachlor	17	<PQL	0	NSL	-
PCBs	17	<PQL	0	NSL	-
TRH F1	48	<PQL	0	0	-

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
TRH F2	48	210	1	1	The TRH F2 concentration in one fill soil sample collected from TP118 (0-0.2m) exceeded the human health (HSL) and ecological SAC.
TRH F3	48	630	0	2	TRH F3 concentrations exceeded the ecological SAC in one fill soil sample collected from TP118 (0-0.2m) and one natural soil sample collected from TP115 (1.1-1.3m).
TRH F4	48	290	0	0	-
Benzene	48	<PQL	0	0	-
Toluene	48	<PQL	0	0	-
Ethylbenzene	48	<PQL	0	0	-
Xylenes	48	<PQL	0	0	-
Asbestos (in soil)	32	ACM <0.01 AF/FA <0.001	0	NA	Asbestos was not identified within the 500mL samples submitted for laboratory analysis.

Notes:

N: Total number (primary samples)

NSL: No set limit

NL: Not limiting

7.4.2 Waste Classification Assessment

The laboratory results were assessed against the criteria presented in Section 6.1.4. The results are presented in the report tables attached in the appendices. A summary of the results is presented in the following table:

Table 7-4: Summary of Soil Laboratory Results Compared to CT and SCC Criteria

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
Arsenic	48	0	0	-
Cadmium	48	0	0	-
Chromium	48	0	0	-
Copper	48	NSL	NSL	-
Lead	48	0	0	-
Mercury	48	0	0	-

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
Nickel	48	0	0	-
Zinc	48	NSL	NSL	-
TRH (C_6-C_9)	48	0	0	-
TRH (C_{10}-C_{36})	48	0	0	-
BTEX	48	0	0	-
Total PAHs	48	0	0	-
Benzo(a)pyrene	48	0	0	-
OCPs & OPPs	17	0	0	A concentration of dieldrin was recorded in one fill soil sample collected from TP114 (0-0.2m). Dieldrin is assessed as total scheduled chemicals (as shown on Table S7 in the appendices) which has a CT1 threshold of 50mg/kg. The maximum dieldrin concentration was 1.2mg/kg. No other compounds captured within the total scheduled chemicals list were identified above the PQL. JKE note that the total scheduled chemicals concentration was below the 2mg/kg threshold for management in accordance with the Scheduled Chemicals Waste Chemical Control Order 2004[19], therefore the provisions of the CCO 2004 do not apply.
PCBs	17	0	0	-
Asbestos	32	-	-	Asbestos was not detected in the samples analysed.

N: Total number (primary samples)

NSL: No set limit

7.5 Groundwater Laboratory Results

The soil laboratory results were assessed against the SAC presented in Section 6.2. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented below:

Table 7-5: Summary of Groundwater Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	5	4	0	0	-
Cadmium	5	<PQL	0	0	-

[19] NSW EPA, (2004). *Environmentally Hazardous Chemicals Act 1985. Chemical Control Order in Relation to Scheduled Chemical Wastes* (CCO, 2004)

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Chromium (total)	5	2	0	0	-
Copper	5	6	0	1	A copper concentration above the ecological SAC of 1.4µg/L was recorded in the groundwater sample collected from MW1.
Lead	5	<PQL	0	0	-
Mercury	5	0.06	0	0	-
Nickel	5	24	0	1	A nickel concentration above the ecological SAC of 11µg/L was recorded in the groundwater sample collected from MW1.
Zinc	5	27	0	5	Zinc concentrations above the ecological SAC of 8µg/L were recorded in the groundwater samples collected from all monitoring wells.
Total PAHs	5	<PQL	0	0	-
Benzo(a)pyrene	5	<PQL	0	0	-
Carcinogenic PAHs (as BaP TEQ)	5	<PQL	0	0	-
TRH F1	5	<PQL	0	NSL	-
TRH F2	5	<PQL	0	NSL	-
TRH F3	5	<PQL	NSL	NSL	-
-TRH F4	5	<PQL	NSL	NSL	-
Benzene	5	<PQL	0	0	-
Toluene	5	<PQL	0	0	-
Ethylbenzene	5	<PQL	0	0	-
m+p-Xylene	5	<PQL	0	0	-
o-Xylene	5	<PQL	0	0	-
Total Xylenes	5	<PQL	0	0	-

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
pH	5	Min: 6.5 Max: 7.1	0	0	The pH of the groundwater samples ranged from pH 6.5 to pH 7.1 and were within the acceptable ranges for recreational and ecological SAC.
EC	5	16,000 µS/cm	NSL	NSL	The EC results ranged from 1,500µS/cm to 16,000µS/cm.

Notes:

^: Primary samples

N: Total number

NSL: No set limit

NL: Not limiting

8 PRELIMINARY WASTE CLASSIFICATION ASSESSMENT

8.1 Preliminary Waste Classification of Fill

Based on the available results (including the PSI and DSI), and at the time of reporting, the fill is assigned a preliminary classification of **General Solid Waste (non-putrescible)**. Further assessment including additional testing is required to confirm the final waste classification prior to off-site disposal. The anticipated waste quantities should also be confirmed at that time and documented in the report.

The soils and backfill sands associated with the USTs have not been classified and this will need to occur during the removal process.

8.2 Preliminary Classification of Natural Soil

Based on the available results (including the PSI and DSI), and at the time of reporting, the alluvial silty clay in the vicinity of TP115 is assigned a preliminary classification of **General Solid Waste (non-putrescible)**, due to the elevated TRH concentrations detected at depth. JKE note that the TRH concentrations may potentially be attributable to organic polar compounds within the soil matrix which can cause interference during analysis, however further assessment would be required to confirm this.

Based on the available results, and at the time of reporting, JKE is of the opinion that the alluvial silty clay and silty sandy clay within the site (with the exception of the soil in the vicinity of TP115 and in the vicinity of the USTs) will likely meet the definition of VENM for off-site disposal or re-use purposes.

Further assessment is required to confirm these classifications prior to off-site disposal of the waste. The anticipated waste quantities should also be confirmed at that time and documented in the report.

9 DISCUSSION

9.1 Tier 1 Risk Assessment and Review of CSM

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant; and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

If one of the above components is missing, the potential for adverse risks is relatively low.

9.1.1 Soil

9.1.1.1 Asbestos

Asbestos was not identified in or on soils during the DSI or PSI. The investigations identified shallow filling across the site, with some inclusions of building rubble including AC fragments, brick, ceramic and plastic. However, no FCF/ACM was visually identified in or on soils, and no asbestos was identified in the soil samples analysed by the laboratory.

On this basis, the potential for asbestos to be encountered in or on soils at concentrations that pose a health-risk under the proposed land use scenario is considered to be low. Potential construction-phase risks associated with unexpected asbestos-related finds can be managed via the implementation of a suitable unexpected finds protocol.

9.1.1.2 Heavy Metals

All heavy metal results were below the relevant SAC and were not considered to pose a risk to receptors.

9.1.1.3 Hydrocarbons

A concentration of TRH F2 above the human health and ecological SAC was recorded in the surficial fill soils in TP118. Concentrations of TRH F3 above the ecological SAC were also recorded in the surficial fill soils in TP118 and the deeper alluvial silty clay soil in TP115. TP115 and TP118 were located in the north and north-east of the site as shown on Figure 3 attached in the appendices. There were no odours associated with any of these occurrences of TRH.

The source of the surficial TRH impacts in the vicinity of TP118 was considered likely associated with a surficial spill/release such as from lawn maintenance equipment (i.e. lawn mower, blower etc). TRH was not recorded above the PQL in the underlying natural soil sample, indicating the TRH impacts were likely confined to the surficial fill soils. TP118 was located in a grass-covered area and the elevated TRH F2 and F3 concentrations were recorded in the surficial soils. The grass cover in the vicinity of TP118 appeared healthy and well-maintained based on a cursory inspection. No visible obvious evidence of plant distress was noted. Based on the observed site conditions (vegetation cover and apparent healthy condition), JKE is of the opinion the TRH F2 and F3 in surficial fill in the vicinity of TP118 is unlikely to pose an unacceptable risk to ecological receptors.

From a human-health risk perspective, JKE note that the human-health SAC for TRH F2 (110mg/kg) is based on vapour intrusion assuming that a building is or will be at this location. It is noted that the HSL for public open space (i.e. open landscaped areas) is not limiting (i.e. no set limit), as there is not considered to be a risk of vapour intrusion and unacceptable exposure to vapours in the absence of buildings/structures. Based on the minor exceedance of the SAC, the current site configuration and the fact that surficial fill would likely be removed (for site preparation purposes) in the event that a building was constructed in this vicinity, JKE considered the TRH F2 in surficial fill in the vicinity of TP118 was unlikely to pose an unacceptable risk to human health.

TP115 is located in a grass-covered area and the elevated TRH F3 concentration was recorded within the underlying alluvial silty clay soil (1.1-1.3m). TRH was not recorded above the PQL in the overlying fill soil sample, indicating the TRH impacts were unlikely to be a result of surficial/top-down release. No potential sub-surface point sources of TRH contamination (such as USTs) were identified in the vicinity of TP115. On this basis, JKE were of the opinion that the TRH F3 concentration is likely associated, at least in part, with interference from organic polar compounds during analysis. However, further investigation would be required to confirm this. JKE note that the vegetation in the vicinity of TP115 (including grass cover, shrubbery and mature trees) appeared to be in good health based on a cursory inspection with no visible obvious evidence of plant distress noted. Based on the observed site conditions, JKE is of the opinion the TRH F3 in deeper alluvial silty clay soil in the vicinity of TP115 is unlikely to pose an unacceptable risk to ecological receptors.

During the PSI, a concentration of TRH F2 above the human health and ecological SAC was recorded in the surficial fill soils in BH7, located in the south-east of the site as shown on Figure 3 attached in the appendices. For the reasons above, the TRH F2 in surficial fill in the vicinity of BH7 was considered unlikely to pose an unacceptable risk to human health and/or ecological receptors.

JKE note that a hydrocarbon odour was encountered in the shallow fill soils in BH103, along with an elevated PID reading of greater than 25ppm. BH103 was targeted to the vicinity of the disused USTs. The odorous fill may be indicative of a historical leak/spill in this vicinity. Though the TRH and PAH results were below the PQL, given the proximity to the USTs, consideration should be given to localised remediation in this area. There is a potential for impacts to occur within the tank pit backfill sands.

9.1.1.4 Pesticides and PCBs

Dieldrin (an OCP compound) was recorded in the surficial fill soils in TP114, at a concentration approximately 20% of the human health SAC. TP114 was located in the south-west of the site, to the west of the staff accommodation building, as shown on the attached buildings. The source of the dieldrin is considered likely associated with historical pesticide application near the buildings.

JKE note that the concentration was well below the SAC and considering multiple lines of evidence, the reported dieldrin concentration is not considered to pose a risk to receptors. All other pesticide and PCB results were below the laboratory PQLs.

9.1.2 Groundwater

9.1.2.1 Heavy metals

Zinc concentrations above the ecological SAC were detected in all of the groundwater samples. Copper and nickel concentrations above the ecological SAC were also detected in the groundwater samples collected from MW1. MW1 was located in the south-east and down-gradient are of the site as shown on Figure 3 attached in the appendices.

The zinc results were relatively consistent between all of the groundwater samples. The copper and nickel concentrations in the sample collected from MW1 were notably higher than the other samples. The concentrations of copper, nickel and zinc recorded within the soil samples collected from these locations were generally consistent with the expected ambient conditions, indicating the soils at the site were unlikely to be the source of the heavy metals. On this basis, JKE consider the zinc impacts are likely a regional issue.

The occurrence of marginally elevated copper and nickel in MW1 is considered to be attributed to grey water impacts, most likely associated with a leaking sewer and the discharge of laundry water containing detergent. This is supported by the high EC in MW1 and the observations during development. We also note that the survey identified a service pit full of grey water located to the south of the main building and that the sewer ran adjacent to this service pit. The survey is attached in the appendices.

Based on the proximity of ecological receptors relevant to groundwater and the marginally elevated copper and nickel concentrations associated with MW1, it is our opinion that the elevated concentrations do not pose an unacceptable risk to ecological receptors.

All other heavy metal results were below the ecological SAC. All heavy metal results were below the recreational SAC.

9.1.2.2 Hydrocarbons

All hydrocarbon (BTEX/TRH and PAH) concentrations were below the SAC. All hydrocarbon results were below the respective laboratory PQLs.

The DSI did not identify groundwater impacts that were indicative of widespread TRH and/or BTEX contamination in the vicinity of the disused USTs.

9.1.2.3 Physical Parameters

The pH of the groundwater ranged from pH 6.5 to 7.1 and were within the ecological and recreational SAC ranges.

The EC results of the groundwater ranged from 1,500µS/cm to 16,000µS/cm. JKE note that the EC results for the groundwater sample collected from MW1 was approximately 5-10x greater than the remaining groundwater samples and this is likely to be attributed to the grey water impacts as discussed above.

9.2 Decision Statements

The decision statements are addressed below:

Are any results above the SAC?

Yes, as discussed in Section 7.

Do potential risks associated with contamination exist, and if so, what are they?

Immediate and unacceptable risks to human health and/or ecological receptors were not identified during the DSI. There is a potential for localised soil impacts to be associated with the UST, particularly in the tank pit backfill.

Is remediation required?

The DSI has not identified unacceptable risks that warrant remediation in our opinion. However, due to the sampling data gaps beneath buildings and due to the potential for localised impacts in the UST pit, we recommend that a RAP be prepared to provide a framework to manage the removal of the USTs and potential risks associated with contamination.

Is the site characterisation sufficient to provide adequate confidence in the above decisions?

Yes.

Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

JKE is of the opinion that the site can be made suitable subject to preparation and implementation of a RAP.

9.3 Data Gaps

An assessment of data gaps is provided in the following table:

Table 9-1: Data Gap Assessment

Data Gap	Assessment
Groundwater flow direction not confirmed.	Two disused USTs and a current back-up generator were identified in the south and south-east of the site. Groundwater samples were collected from monitoring wells targeting these locations which did not detect concentrations of TRH/BTEX above the PQLs. However, odorous fill soils were encountered in the vicinity of the USTs which may be indicative of a former leak/spill. JKE did not ascertain the contents (if any) of the USTs or whether they had been decommissioned. Due to the proximity of the existing buildings to the USTs, and the uncertainty relating to the groundwater flow direction, there is considered to be potential for a leak/spill to occur and potentially impact receptors.

Data Gap	Assessment
	On this basis, the RAP is to include provisions for the removal and validation of the USTs, and any associated infrastructure and stained and/or odorous soils.
Building footprints not assessed.	The sampling locations were positioned outside of the building footprints. The fill and soil conditions beneath the building footprints are currently unknown, though JKE is of the opinion that the soil contaminant conditions would likely be similar to the available data. However, asbestos impacts may be encountered and there is a potential that pesticide applications occurred beneath the buildings, given the detectable concentration of dieldrin in TP114. JKE understand that the existing buildings will likely be retained in the proposed development. In the event that the existing buildings are not retained, further investigation beneath the building footprints is recommended following demolition. Hence, provisions for additional testing are to be included in the RAP.

10 CONCLUSIONS AND RECOMMENDATIONS

The investigation included a review of historical information and sampling from 32 additional locations. The site has historically been used for public recreation until circa 1960, and has been used for a hospital since.

The DSI identified TRHs in soil above the human health and ecological SAC. However, the SAC selected were conservative and the concentrations detected were not considered to pose an unacceptable risk to human health and ecological receptors in the context of the proposed development.

The DSI identified USTs and odorous fill soils which may potentially pose risk to receptors. The DSI has not identified unacceptable risks that warrant remediation in our opinion. However, due to the sampling data gaps beneath buildings and due to the potential for localised impacts in the UST pit, we recommend that a RAP be prepared to provide a framework to manage the removal of the USTs and potential risks associated with contamination.

Based on the findings of the investigation, JKE is of the opinion that the site is suitable for the proposed development described in Section 1.1. via implementation of a suitable RAP. The following is recommended:

- A RAP is to be prepared for the removal, remediation and validation of the USTs and associated infrastructure. The RAP is to include an unexpected finds protocol (UFP). Provisions are to be included within the RAP for additional investigation in the building footprints in the event that the current buildings are not retained, noting this would need to occur once access is available (i.e. following demolition); and
- Undertake a validation assessment documenting the works.

JKE consider that the report objectives outlined in Section 1.2 have been addressed.

11 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or land use. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors

This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the investigation. If the subject site is sold, ownership of the investigation report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the investigation was undertaken. No person should apply an investigation for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions

Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an investigation report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data

Site investigations identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an investigation indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Investigation Limitations

Although information provided by a site investigation can reduce exposure to the risk of the presence of contamination, no environmental site investigation can eliminate the risk. Even a rigorous professional investigation may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Investigations by Design Professionals
Costly problems can occur when other design professionals develop plans based on misinterpretation of an investigation report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Investigation Report
Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the investigation. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the investigation. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete investigation should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely
Because an environmental site investigation is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site investigation, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

Appendix A: Report Figures & Survey Plan

Report Figures

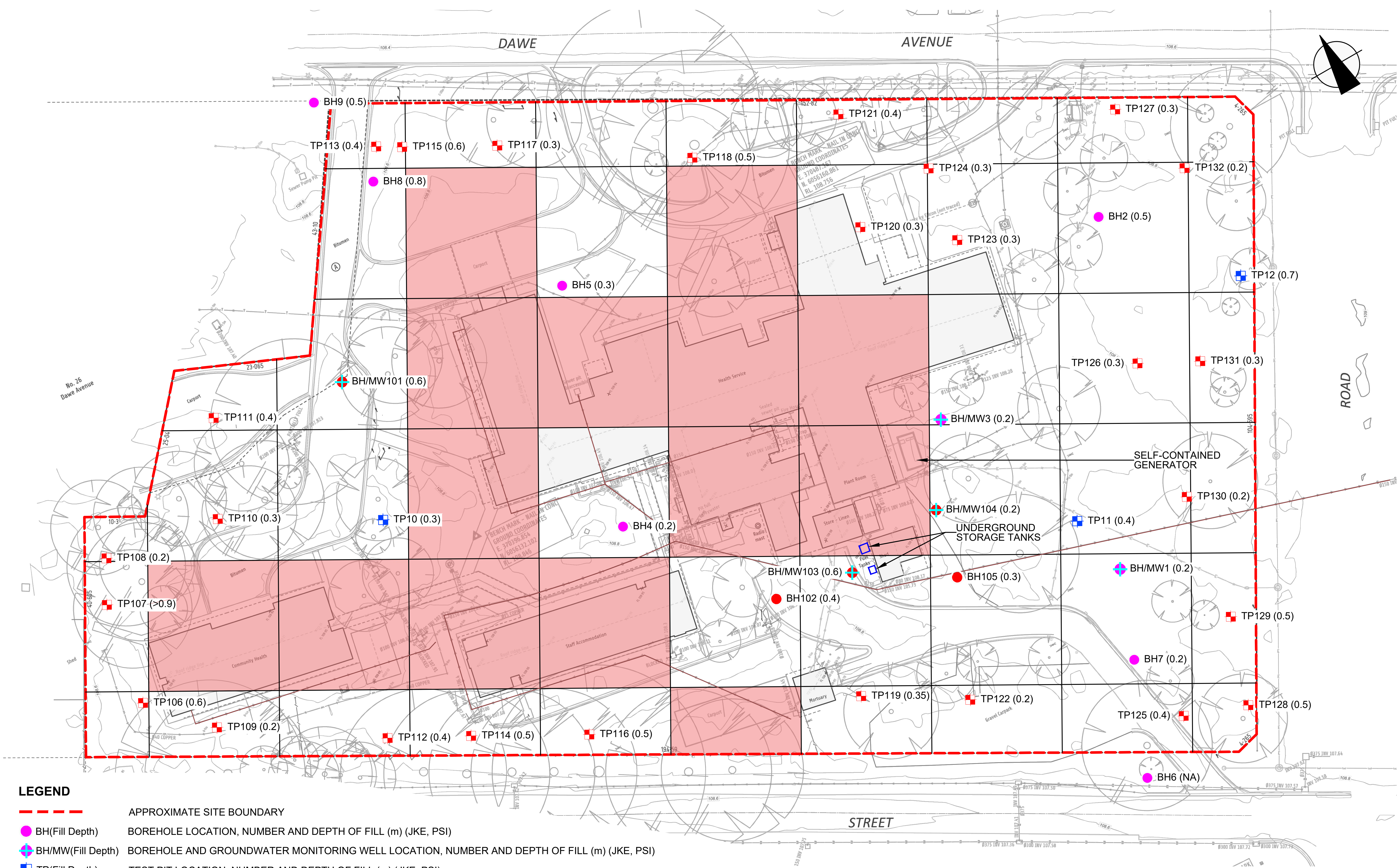
AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

This plan should be read in conjunction with the Environmental report.

Title:	**SITE LOCATION PLAN**
Location:	FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW
Project No: E35821PR	Figure No: 1

JKEnvironments

PLOT DATE: 25/05/2023 11:36:25 AM DWG FILE: K:\5C EIS JOBS\35000'S\E35821PR FINLEY\CADE35821PR.DWG



LEGEND

(red dashed line)	APPROXIMATE SITE BOUNDARY
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
TP(Fill Depth)	TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
BH101	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
BH/MW102	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
TP106	TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
(pink box)	INACCESSIBLE AREAS
(brown line)	SEWER LINE / POSSIBLE SEWER LINE

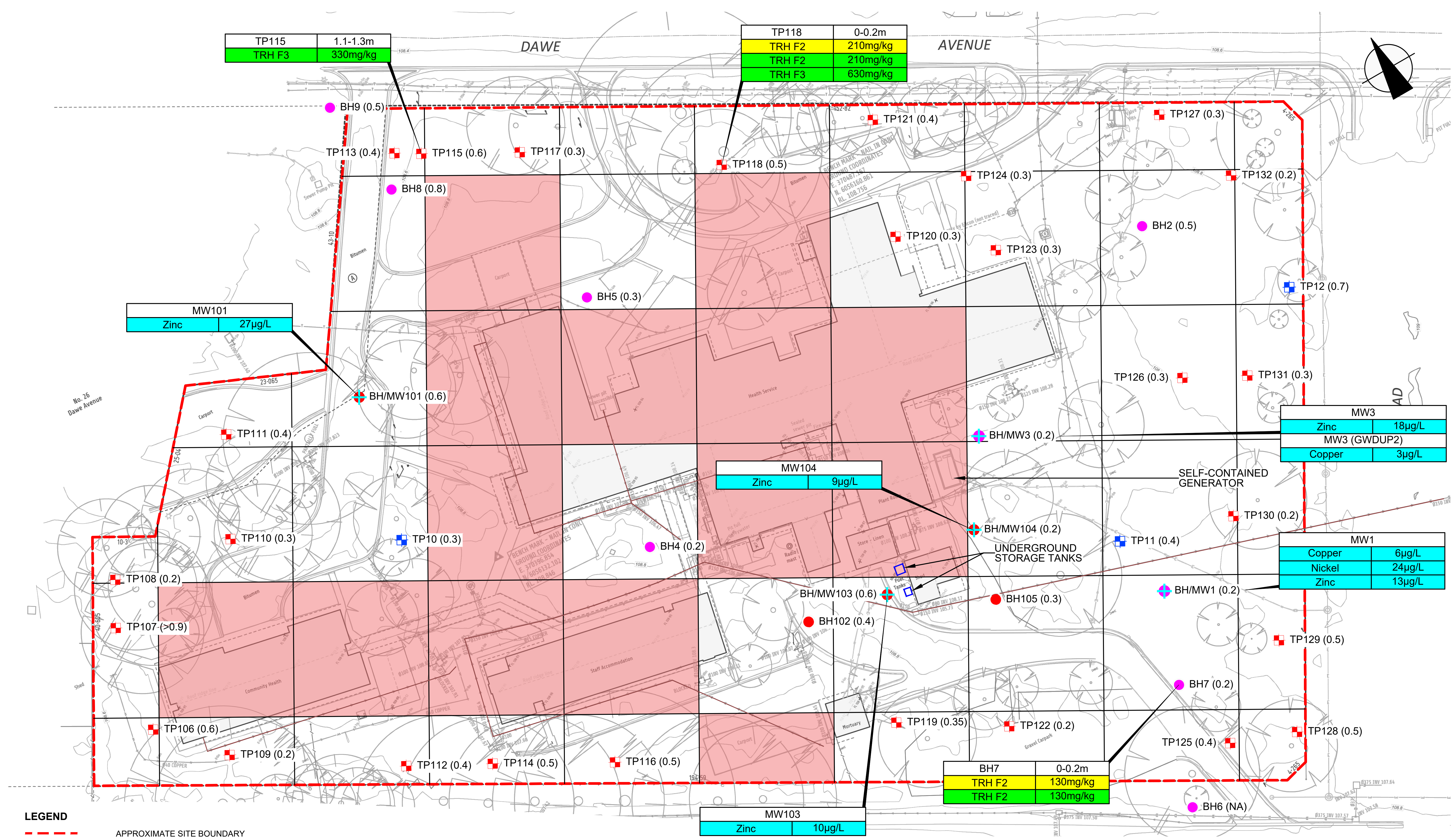
0 6 12 18 24 30
SCALE 1:600 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title:	SAMPLE LOCATION PLAN
Location:	FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW
Project No:	E35821PR
Figure No:	2

JKEnvironments

PLOT DATE: 29/09/2023 1:27:33 PM DWG FILE: K:\5C EIS JOBS\35000'S\E35821PR FINLEY\CAD\E35821PR.DWG



LEGEND

	APPROXIMATE SITE BOUNDARY
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
TP(Fill Depth)	TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, PSI)
BH101	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
BH/MW102	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
TP106	TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, DSI)
	INACCESSIBLE AREAS
	SEWER LINE / POSSIBLE SEWER LINE

SAMPLE ID	-
CHEMICAL	CONCENTRATION (µg/L)

GROUNDWATER SAMPLE EXCEEDANCE

GROUNDWATER CONTAMINATION ABOVE SAC

SAMPLE ID	DEPTH (metres)
CHEMICAL	CONCENTRATION

SOIL/SURFACE SAMPLE EXCEEDANCE

SOIL/SURFACE CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK

SOIL/SURFACE CONTAMINATION ABOVE SAC FOR ECOLOGICAL RISK

0 6 12 18 24 30

SCALE 1:600 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: **SAC EXCEEDANCE PLAN**

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

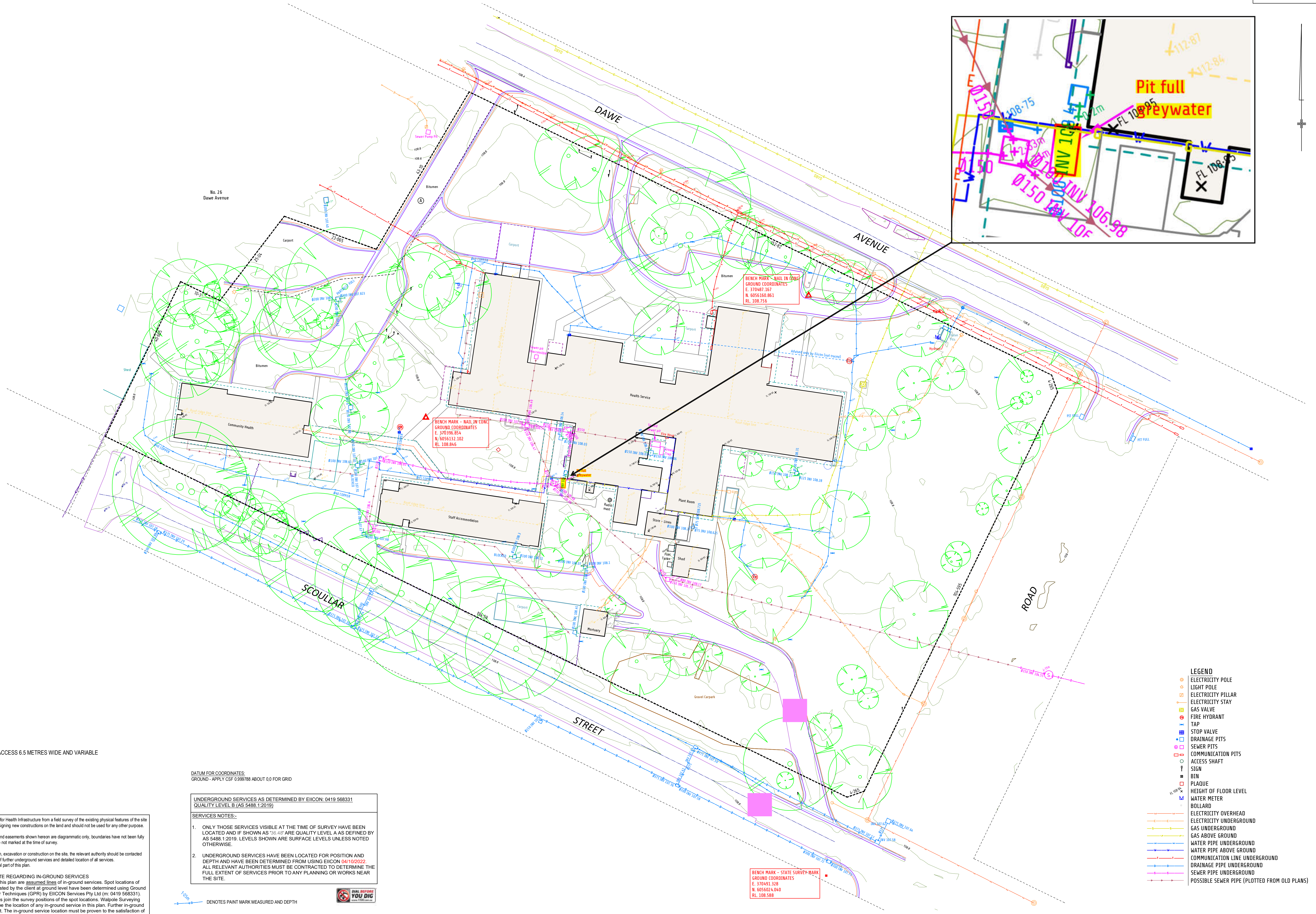
Project No: E35821PR

Figure No: 3

JKEnvironments

PLOT DATE: 27/10/2023 9:31:35 AM DWG FILE: K:\5C EIS JOBS\35000'S\E35821PR FINLEY\CAD\E35821PR.DWG

Survey Plan



Ⓐ RIGHT OF ACCESS 6.5 METRES WIDE AND VARIABLE

DATUM FOR COORDINATES:
GROUND - APPLY CSF 0.999788 ABOUT 0,0 FOR GRID

UNDERGROUND SERVICES AS DETERMINED BY EIICON: 0419 568331
QUALITY LEVEL B (AS 5488.1:2019)

SERVICES NOTES:-

1. ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND IF SHOWN AS '36.48' ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019. LEVELS SHOWN ARE SURFACE LEVELS UNLESS NOTED OTHERWISE.
2. UNDERGROUND SERVICES HAVE BEEN LOCATED FOR POSITION AND DEPTH AND HAVE BEEN DETERMINED FROM USING EIICON 04/10/2022. ALL RELEVANT AUTHORITIES MUST BE CONTRACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

This plan is prepared for Health Infrastructure from a field survey of the existing physical features of the site for the purpose of designing new constructions on the land and should not be used for any other purpose.

The title boundaries and easements shown hereon are diagrammatic only, boundaries have not been fully investigated and were not marked at the time of survey.

Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed location of all services.
This note is an integral part of this plan.

IMPORTANT NOTE REGARDING IN-GROUND SERVICES
Contained within this plan are assumed lines of in-ground services. Spot locations of services as requested by the client at ground level have been determined using Ground Penetrating Radar Techniques (GPR) by EIICON Services Pty Ltd (m: 0419 568331). The assumed lines join the survey positions of the spot locations. Walpole Surveying does not guarantee the location of any in-ground service in this plan. Further in-ground services may exist. The in-ground service location must be proven to the satisfaction of the land owner and responsible authority before any excavation work commences.

1·05m DENOTES PAINT MARK MEASURED AND DEPTH

Much of the sewer and storm water proved difficult to trace and locate with GPR due to material of construction being PVC and clay.
(As advised by EIICON and maintenance)

DIAL BEFORE YOU DIG

WALPOLE SURVEYING	SURVEYORS REF:	SCALE	ORIGINAL	NOTES	
Licensed NSW & Victorian Cadastral and Engineering Surveyors 465 Smollett Street PO Box 3186, Albury, NSW 2640 p: 02 6021 2233 | f: 02 6021 1411 info@walpolesurveying.com.au	22146 VERSION 1 14/10/2022	5 0 5 10 15 LENGTHS ARE IN METRES	SCALE 1:400 SHEET SIZE A1	DATE OF SURVEY: October 2022 DATUM FOR COORDINATES: Modfied DATUM FOR LEVELS: AHD Vide GNSS Smartnet CONTOUR INTERVAL: 0.2m TREES SHOWN ARE APPROXIMATELY TO SCALE	*PLAN OF FEATURES, LEVELS AND SERVICES* *FINLEY HOSPITAL* *24 Dawe Avenue, Finley* *For Health Infrastructure*

Appendix B: Selected Site Photographs

Photograph 1: MW103 installation

Photograph 2: UST access point

Photograph 3: MW103 and USTs

Photograph 4: Current back-up generator

Photograph 5: Staff accommodation building and access track

Photograph 6: General site condition

Appendix C: Laboratory Results Summary Tables

DSI Results Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration
ACM:	Asbestos Containing Material
ADWG:	AustralianDrinking Water Guidelines
AF:	Asbestos Fines
ANZG	Australian and New Zealand Guidelines
B(a)P:	Benzo(a)pyrene
CEC:	Cation Exchange Capacity
CRC:	Cooperative Research Centre
CT:	Contaminant Threshold
EILs:	Ecological Investigation Levels
ESLs:	Ecological Screening Levels
FA:	Fibrous Asbestos
GIL:	Groundwater Investigation Levels
GSW:	General Solid Waste
HILs:	Health Investigation Levels
HSLs:	Health Screening Levels
HSL-SSA:	Health Screening Level-SiteSpecific Assessment
kg/L	kilograms per litre
NA:	Not Analysed
NC:	Not Calculated
NEPM:	National Environmental Protection Measure
NHMRC:	National Health and Medical Research Council
%w/w:	weight per weight
ppm:	Parts per million
NL:	Not Limiting
NSL:	No Set Limit
OCP:	Organochlorine Pesticides
OPP:	Organophosphorus Pesticides
PAHs:	Polycyclic Aromatic Hydrocarbons
PCBs:	Polychlorinated Biphenyls
PQL:	Practical Quantitation Limit
RS:	Rinsate Sample
RSL:	Regional Screening Levels
RSW:	Restricted Solid Waste
SAC:	Site Assessment Criteria
SCC:	Specific Contaminant Concentration
SSA:	Site Specific Assessment
SSHSLs:	Site Specific Health Screening Levels
TB:	Trip Blank
TCLP:	Toxicity Characteristics Leaching Procedure
TS:	Trip Spike
TRH:	Total Recoverable Hydrocarbons
UCL:	Upper Level Confidence Limit on Mean Value
USEPA	United States Environmental Protection Agency
VOCC:	Volatile Organic Chlorinated Compounds
WHO:	World Health Organisation

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also refered to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with low traffic have been quoted).

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

QA/QC Table:

- Field blank, Inter and Intra laboratory duplicate results are reported in mg/kg.
- Trip spike results are reported as percentage recovery.
- Field rinsate results are reported in µg/L.

TABLE S1
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH101	0.1-0.3	F: Silty Clay	**13**	<0.4	**25**	**31**	**13**	<0.1	**18**	**55**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	**12**	<0.4	**24**	**26**	**12**	<0.1	**13**	**36**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH101 - [LAB_TRIP]	0.1-0.3	laboratory Triplicate	**8**	<0.4	**24**	**22**	**14**	<0.1	**14**	**40**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH101	0.6-0.95	F: Silty Clay	**5**	<0.4	**27**	**16**	**12**	<0.1	**21**	**25**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH102	0.02-0.2	F: Silty Clay	**10**	<0.4	**16**	**16**	**9**	<0.1	**16**	**50**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH103	0.02-0.2	F: Silty Clay	**7**	<0.4	**34**	**25**	**17**	<0.1	**20**	**39**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH103	0.6-0.95	Silty Clay	**5**	<0.4	**27**	**20**	**14**	<0.1	**17**	**32**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH104	0-0.2	F: Silty Clay	**6**	<0.4	**22**	**31**	**23**	**0.1**	**11**	**96**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH104	0.6-0.95	Silty Clay	**6**	<0.4	**27**	**22**	**14**	<0.1	**20**	**38**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH104	4.6-4.95	Silty Clay	<4	<0.4	**27**	**16**	**27**	<0.1	**19**	**49**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH105	0.05-0.2	F: Silty Clay	**6**	<0.4	**25**	**14**	**13**	<0.1	**14**	**30**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP106	0-0.2	F: Silty Sandy Clay	<4	<0.4	**10**	**3**	**5**	<0.1	**2**	**7**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP107	0-0.2	F: Silty Clay	<4	<0.4	**17**	**11**	**9**	<0.1	**9**	**23**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	<4	<0.4	**13**	**9**	**7**	<0.1	**6**	**17**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP107	0.7-0.9	F: Silty Clay	**8**	<0.4	**40**	**24**	**18**	<0.1	**23**	**41**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP108	0-0.2	F: Silty Clay	**6**	<0.4	**28**	**18**	**15**	<0.1	**17**	**35**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP109	0-0.2	F: Silty Clay	**5**	<0.4	**20**	**15**	**75**	<0.1	**12**	**78**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP109	0.7-0.9	Silty Clay	**8**	<0.4	**32**	**21**	**17**	<0.1	**22**	**42**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP110	0-0.2	F: Silty Clay	**8**	<0.4	**40**	**22**	**18**	<0.1	**26**	**36**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP110	0.6-0.8	Silty Clay	**7**	<0.4	**28**	**21**	**17**	<0.1	**17**	**47**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP111	0-0.2	F: Silty Clay	**6**	<0.4	**25**	**14**	**11**	<0.1	**15**	**37**	**2**	**0.6**	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP112	0-0.2	F: Silty Clay	**6**	<0.4	**24**	**160**	**49**	<0.1	**19**	**120**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP113	0-0.2	F: Silty Clay	**6**	<0.4	**30**	**18**	**18**	<0.1	**19**	**38**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP114	0-0.2	F: Silty Clay	**10**	<0.4	**29**	**41**	**15**	<0.1	**17**	**38**	<0.05	<0.5	<0.1	<0.1	<0.1	**0.9**	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP114 - [LAB_DUP]	0-0.2	Laboratory Duplicate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	**1.2**	<0.1	<0.1	<0.1	NA	NA	NA
TP114	0.8-1	Silty Clay	**7**	<0.4	**35**	**21**	**15**	<0.1	**28**	**35**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP115	0-0.2	F: Silty Clay	**6**	<0.4	**26**	**18**	**23**	<0.1	**16**	**43**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP115	1.1-1.3	Silty Clay	**9**	<0.4	**28**	**27**	**16**	<0.1	**20**	**69**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP116	0-0.2	F: Silty Clay	**12**	<0.4	**26**	**15**	**17**	<0.1	**15**	**33**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**12**	<0.4	**25**	**17**	**16**	<0.1	**16**	**36**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP117	0-0.2	F: Silty Clay	<4	<0.4	**14**	**11**	**12**	<0.1	**7**	**35**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP118	0-0.2	F: Silty Clay	<4	<0.4	**12**	**19**	**12**	<0.1	**6**	**32**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP118	1-1.2	Silty Clay	**9**	<0.4	**34**	**21**	**17**	<0.1	**22**	**44**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP119	0-0.2	F: Silty Clay	**8**	<0.4	**30**	**20**	**21**	<0.1	**19**	**72**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP119	0.7-0.9	Silty Clay	**9**	<0.4	**39**	**24**	**17**	<0.1	**22**	**43**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP120	0-0.2	F: Silty Clay	**4**	<0.4	**17**	**15**	**15**	**0.5**	**9**	**65**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**4**	<0.4	**15**	**13**	**14**	**0.5**	**7**	**57**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP120	0.6-0.8	Silty Clay	**8**	<0.4	**33**	**21**	**16**	<0.1	**21**	**39**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP121	0-0.2	F: Silty Clay	**5**	<0.4	**21**	**35**	**17**	<0.1	**11**	**47**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH122	0.05-0.2	F: Silty Clay	**8**	<0.4	**37**	**21**	**18**	<0.1	**29**	**44**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP123	0-0.2	F: Silty Clayey Sand	<4	<0.4	**10**	**3**	**5**	<0.1	**4**	**16**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP123	0.6-0.8	Silty Sandy Clay	**4**	<0.4	**21**	**12**	**11**	<0.1	**14**	**28**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP124	0-0.2	F: Silty Clay	<4	<0.4	**17**	**12**	**8**	<0.1	**5**	**30**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP125	0-0.2	F: Silty Clay	**5**	<0.4	**25**	**14**	**15**	<0.1	**17**	**28**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP125	0.7-09	Silty Clay	**7**	<0.4	**36**	**22**	**19**	<0.1	**24**	**43**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP126	0-0.2	F: Silty Clay	**6**	<0.4	**27**	**14**	**15**	<0.1	**14**	**24**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP127	0-0.2	F: Silty Clay	**5**	<0.4	**22**	**13**	**16**	<0.1	**10**	**26**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP127	0.6-0.8	Silty Clay	**8**	<0.4	**35**	**22**	**16**	<0.1	**21**	**40**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP128	0-0.2	F: Silty Clay	**7**	<0.4	**36**	**18**	**15**	<0.1	**20**	**34**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**8**	<0.4	**37**	**19**	**16**	<0.1	**25**	**35**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP129	0-0.2	F: Silty Clay	**6**	<0.4	**19**	**14**	**17**	<0.1	**14**	**33**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP130	0-0.2	F: Silty Clay	**5**	<0.4	**26**	**15**	**15**	<0.1	**16**	**23**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP130	0.5-0.7	Silty Clay	**7**	<0.4	**32**	**21**	**16**	<0.1	**20**	**36**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP131	0-0.2	F: Silty Clay	**4**	<0.4	**24**	**12**	**12**	<0.1	**9**	**19**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP132	0-0.2	F: Silty Clay	**4**	<0.4	**19**	**10**	**12**	<0.1	**10**	**18**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
SDUP1	0-0.2	Duplicate of TP128	**7**	<0.4	**31**	**18**	**16**	<0.1	**21**	**29**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**8**	<0.4	**34**	**19**	**18**	<0.1	**24**	**33**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP2	0-0.2	Duplicate of TP129	**6**	<0.4	**19**	**14**	**16**	<0.1	**14**	**32**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP3	0-0.2	Duplicate of TP125	**5**	<0.4	**25**	**15**	**16**	<0.1	**17**	**30**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP4	0-0.2	Duplicate of TP119	**6**	<0.4	**24**	**16**	**17**	<0.1	**15**	**60**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP5	0-0.2	Duplicate of TP116	**7**	<0.4	**24**	**13**	**11**	<0.1	**13**	**27**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP5 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**6**	<0.4	**23**	**13**	**13**	<0.1	**14**	**26**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP6	0-0.2	Duplicate of TP114	**8**	<0.4	**24**	**14**	**10**	<0.1	**15**	**34**	<0.05	<0.5	<0.1	<0.1	<0.1	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Total Number of Samples			62	62	62	62	62	62	62	62	60	60	25	25	25	25	25	25	25	24	24	32
Maximum Value			13	<PQL	40	160	75	0.5	29	120	2	0.6	<PQL	<PQL	<PQL	1.2	<PQL	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**

TABLE S2
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category					**HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH101	0.1-0.3	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
BH101	0.6-0.95	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
BH102	0.02-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.7
BH103	0.02-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	25.2
BH103	0.6-0.95	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.3
BH104	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	4
BH104	0.6-0.95	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	14.3
BH104	4.6-4.95	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.3
BH105	0.05-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP106	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.7
TP107	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.7
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP107	0.7-0.9	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.5
TP108	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.6
TP109	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP109	0.7-0.9	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.5
TP110	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP110	0.6-0.8	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP111	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.7
TP112	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP113	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP114	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.1
TP114	0.8-1	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP115	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP115	1.1-1.3	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
TP116	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.3
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP117	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP118	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	**210**	<0.2	<0.5	<1	<1	<1	0.1
TP118	1-1.2	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP119	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.5
TP119	0.7-0.9	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP120	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP120	0.6-0.8	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP121	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
BH122	0.05-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP123	0-0.2	F: Silty Clayey Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP123	0.6-0.8	Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP124	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP125	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP125	0.7-09	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP126	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP127	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP127	0.6-0.8	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP128	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP129	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP130	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.4
TP130	0.5-0.7	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.5
TP131	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
TP132	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
SDUP1	0-0.2	Duplicate of TP128	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP2	0-0.2	Duplicate of TP129	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP3	0-0.2	Duplicate of TP125	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP4	0-0.2	Duplicate of TP119	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP5	0-0.2	Duplicate of TP116	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP6	0-0.2	Duplicate of TP114	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
Total Number of Samples					60	60	60	60	60	60	60	48
Maximum Value					<PQL	210	<PQL	<PQL	<PQL	<PQL	<PQL	25.2

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
The guideline corresponding to the concentration above the SAC is highlighted in grey in the Site Assessment Criteria Table below

HSL SOIL ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
BH101	0.1-0.3	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH101	0.6-0.95	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH102	0.02-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103	0.02-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH103	0.6-0.95	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	0.6-0.95	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH104	4.6-4.95	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH105	0.05-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP106	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP107	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP107	0.7-0.9	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP108	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP109	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP109	0.7-0.9	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP110	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP110	0.6-0.8	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP111	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP112	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP113	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP114	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP114	0.8-1	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP115	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP115	1.1-1.3	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP116	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP117	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP118	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP118	1-1.2	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP119	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP119	0.7-0.9	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP120	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP120	0.6-0.8	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP121	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH122	0.05-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP123	0-0.2	F: Silty Clayey Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP123	0.6-0.8	Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP124	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP125	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP125	0.7-09	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP126	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP127	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP127	0.6-0.8	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP128	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP129	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP130	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP130	0.5-0.7	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP131	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP132	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP1	0-0.2	Duplicate of TP128	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP2	0-0.2	Duplicate of TP129	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP3	0-0.2	Duplicate of TP125	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP4	0-0.2	Duplicate of TP119	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP5	0-0.2	Duplicate of TP116	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP6	0-0.2	Duplicate of TP114	0m to <1m	Sand	45	110	0.5	160	55	40	3

TABLE S3
SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS
All data in mg/kg unless stated otherwise

			C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH101	0.1-0.3	Coarse	<25	<50	<100	<100
BH101 - [LAB_DUP]	0.1-0.3	Coarse	<25	<50	<100	<100
BH101	0.6-0.95	Coarse	<25	<50	<100	<100
BH102	0.02-0.2	Coarse	<25	<50	**250**	**290**
BH103	0.02-0.2	Coarse	<25	<50	<100	<100
BH103	0.6-0.95	Coarse	<25	<50	<100	<100
BH104	0-0.2	Coarse	<25	<50	<100	<100
BH104	0.6-0.95	Coarse	<25	<50	<100	<100
BH104	4.6-4.95	Coarse	<25	<50	<100	<100
BH105	0.05-0.2	Coarse	<25	<50	<100	<100
TP106	0-0.2	Coarse	<25	<50	<100	<100
TP107	0-0.2	Coarse	<25	<50	<100	<100
TP107 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP107	0.7-0.9	Coarse	<25	<50	<100	<100
TP108	0-0.2	Coarse	<25	<50	<100	<100
TP109	0-0.2	Coarse	<25	<50	<100	<100
TP109	0.7-0.9	Coarse	<25	<50	<100	<100
TP110	0-0.2	Coarse	<25	<50	<100	<100
TP110	0.6-0.8	Coarse	<25	<50	<100	<100
TP111	0-0.2	Coarse	<25	<50	<100	<100
TP112	0-0.2	Coarse	<25	<50	<100	<100
TP113	0-0.2	Coarse	<25	<50	<100	<100
TP114	0-0.2	Coarse	<25	<50	<100	<100
TP114	0.8-1	Coarse	<25	<50	<100	<100
TP115	0-0.2	Coarse	<25	<50	<100	<100
TP115	1.1-1.3	Coarse	<25	<50	**330**	**260**
TP116	0-0.2	Coarse	<25	<50	<100	<100
TP116 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP117	0-0.2	Coarse	<25	<50	<100	<100
TP118	0-0.2	Coarse	<25	**210**	**630**	**230**
TP118	1-1.2	Coarse	<25	<50	<100	<100
TP119	0-0.2	Coarse	<25	<50	<100	<100
TP119	0.7-0.9	Coarse	<25	<50	<100	<100
TP120	0-0.2	Coarse	<25	<50	<100	<100
TP120 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP120	0.6-0.8	Coarse	<25	<50	<100	<100
TP121	0-0.2	Coarse	<25	<50	<100	<100
BH122	0.05-0.2	Coarse	<25	<50	<100	<100
TP123	0-0.2	Coarse	<25	<50	<100	<100
TP123	0.6-0.8	Coarse	<25	<50	<100	<100
TP124	0-0.2	Coarse	<25	<50	<100	<100
TP125	0-0.2	Coarse	<25	<50	<100	<100
TP125	0.7-09	Coarse	<25	<50	<100	<100
TP126	0-0.2	Coarse	<25	<50	<100	<100
TP127	0-0.2	Coarse	<25	<50	<100	<100
TP127	0.6-0.8	Coarse	<25	<50	<100	<100
TP128	0-0.2	Coarse	<25	<50	<100	<100
TP128 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP129	0-0.2	Coarse	<25	<50	**150**	<100
TP130	0-0.2	Coarse	<25	<50	<100	<100
TP130	0.5-0.7	Coarse	<25	<50	<100	<100
TP131	0-0.2	Coarse	<25	<50	<100	<100
TP132	0-0.2	Coarse	<25	<50	<100	<100
SDUP1	0-0.2	Coarse	<25	<50	<100	<100
SDUP1 -	0-0.2	Coarse	<25	<50	<100	<100
SDUP2	0-0.2	Coarse	<25	<50	**150**	<100
SDUP3	0-0.2	Coarse	<25	<50	<100	<100
SDUP4	0-0.2	Coarse	<25	<50	<100	<100
SDUP5	0-0.2	Coarse	<25	<50	<100	<100
SDUP6	0-0.2	Coarse	<25	<50	<100	<100
Total Number of Samples			60	60	60	60
Maximum Value			<PQL	210	630	290

Concentration above the SAC	VALUE
Concentration above the PQL	**Bold**

MANAGEMENT LIMIT ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Soil Texture	C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
BH101	0.1-0.3	Coarse	700	1000	2500	10000
BH101 - [LAB_DUP]	0.1-0.3	Coarse	700	1000	2500	10000
BH101	0.6-0.95	Coarse	700	1000	2500	10000
BH102	0.02-0.2	Coarse	700	1000	2500	10000
BH103	0.02-0.2	Coarse	700	1000	2500	10000
BH103	0.6-0.95	Coarse	700	1000	2500	10000
BH104	0-0.2	Coarse	700	1000	2500	10000
BH104	0.6-0.95	Coarse	700	1000	2500	10000
BH104	4.6-4.95	Coarse	700	1000	2500	10000
BH105	0.05-0.2	Coarse	700	1000	2500	10000
TP106	0-0.2	Coarse	700	1000	2500	10000
TP107	0-0.2	Coarse	700	1000	2500	10000
TP107 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP107	0.7-0.9	Coarse	700	1000	2500	10000
TP108	0-0.2	Coarse	700	1000	2500	10000
TP109	0-0.2	Coarse	700	1000	2500	10000
TP109	0.7-0.9	Coarse	700	1000	2500	10000
TP110	0-0.2	Coarse	700	1000	2500	10000
TP110	0.6-0.8	Coarse	700	1000	2500	10000
TP111	0-0.2	Coarse	700	1000	2500	10000
TP112	0-0.2	Coarse	700	1000	2500	10000
TP113	0-0.2	Coarse	700	1000	2500	10000
TP114	0-0.2	Coarse	700	1000	2500	10000
TP114	0.8-1	Coarse	700	1000	2500	10000
TP115	0-0.2	Coarse	700	1000	2500	10000
TP115	1.1-1.3	Coarse	700	1000	2500	10000
TP116	0-0.2	Coarse	700	1000	2500	10000
TP116 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP117	0-0.2	Coarse	700	1000	2500	10000
TP118	0-0.2	Coarse	700	1000	2500	10000
TP118	1-1.2	Coarse	700	1000	2500	10000
TP119	0-0.2	Coarse	700	1000	2500	10000
TP119	0.7-0.9	Coarse	700	1000	2500	10000
TP120	0-0.2	Coarse	700	1000	2500	10000
TP120 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP120	0.6-0.8	Coarse	700	1000	2500	10000
TP121	0-0.2	Coarse	700	1000	2500	10000
BH122	0.05-0.2	Coarse	700	1000	2500	10000
TP123	0-0.2	Coarse	700	1000	2500	10000
TP123	0.6-0.8	Coarse	700	1000	2500	10000
TP124	0-0.2	Coarse	700	1000	2500	10000
TP125	0-0.2	Coarse	700	1000	2500	10000
TP125	0.7-09	Coarse	700	1000	2500	10000
TP126	0-0.2	Coarse	700	1000	2500	10000
TP127	0-0.2	Coarse	700	1000	2500	10000
TP127	0.6-0.8	Coarse	700	1000	2500	10000
TP128	0-0.2	Coarse	700	1000	2500	10000
TP128 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP129	0-0.2	Coarse	700	1000	2500	10000
TP130	0-0.2	Coarse	700	1000	2500	10000
TP130	0.5-0.7	Coarse	700	1000	2500	10000
TP131	0-0.2	Coarse	700	1000	2500	10000
TP132	0-0.2	Coarse	700	1000	2500	10000
SDUP1	0-0.2	Coarse	700	1000	2500	10000
SDUP1 -	0-0.2	Coarse	700	1000	2500	10000
SDUP2	0-0.2	Coarse	700	1000	2500	10000
SDUP3	0-0.2	Coarse	700	1000	2500	10000
SDUP4	0-0.2	Coarse	700	1000	2500	10000
SDUP5	0-0.2	Coarse	700	1000	2500	10000
SDUP6	0-0.2	Coarse	700	1000	2500	10000

TABLE S4
SOIL LABORATORY RESULTS COMPARED T0 DIRECT CONTACT CRITERIA
All data in mg/kg unless stated otherwise

Analyte		C_6-C_{10}	>C_{10}-C_{16}	>C_{16}-C_{34}	>C_{34}-C_{40}	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services		25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 -Direct contact Criteria		4,400	3,300	4,500	6,300	100	14,000	4,500	12,000	1,400	
Site Use		**RESIDENTIAL WITH ACCESSIBLE SOIL- DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH101	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
BH101 - [LAB_DUP]	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
BH101	0.6-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
BH102	0.02-0.2	<25	<50	**250**	**290**	<0.2	<0.5	<1	<1	<1	**1.7**
BH103	0.02-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**25.2**
BH103	0.6-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.3**
BH104	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**4**
BH104	0.6-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**14.3**
BH104	4.6-4.95	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.3**
BH105	0.05-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP106	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.7**
TP107	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.7**
TP107 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP107	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.5**
TP108	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.6**
TP109	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP109	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.5**
TP110	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
TP110	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP111	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.7**
TP112	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
TP113	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
TP114	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.1**
TP114	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
TP115	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP115	1.1-1.3	<25	<50	**330**	**260**	<0.2	<0.5	<1	<1	<1	**0.8**
TP116	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.3**
TP116 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP117	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP118	0-0.2	<25	**210**	**630**	**230**	<0.2	<0.5	<1	<1	<1	**0.1**
TP118	1-1.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP119	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.5**
TP119	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP120	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP120 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP120	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP121	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
BH122	0.05-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP123	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP123	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP124	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP125	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP125	0.7-09	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP126	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP127	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP127	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP128	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.2**
TP128 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP129	0-0.2	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP130	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.4**
TP130	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.5**
TP131	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
TP132	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
SDUP1	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP1 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP2	0-0.2	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP5	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP6	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
Total Number of Samples		60	60	60	60	60	60	60	60	60	48
Maximum Value		<PQL	210	630	290	<PQL	<PQL	<PQL	<PQL	<PQL	25.2

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**

JKEnvironments

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-A: Residential with garden/accessible soils; children's day care centers; preschools; and primary schools

FIELD DATA															LABORATORY DATA											
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample refeference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation %(w/w)	FA and AF Estimation %(w/w)
SAC			**No**					**0.01**			**0.001**			**0**											**0.01**	**0.001**
19/09/2023	BH101	0.1-0.2	No	2	2,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH101	0.1-0.3	213.11	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
19/09/2023	BH101	0.2-0.6	No	2	3,170	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH101	0.6-1	No	5	6,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH102	0-0.1	No	10	10,710	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH102	0.02-0.2	636.48	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
19/09/2023	BH102	0.1-0.4	No	10	11,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH103	0.02-0.1	No	7	8,610	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH103	0.02-0.2	535.01	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
19/09/2023	BH103	0.1-0.6	No	10	11,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH104	0-0.1	No	10	11,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH104	0-0.2	850.81	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
19/09/2023	BH105	0.05-0.3	No	2	3,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH105	0.05-0.2	619.04	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP106	0-0.1	No	10	14,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP106	0-0.2	861.37	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP106	0.1-0.6	No	10	15,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP107	0-0.1	No	10	12,610	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP107	0-0.2	816.06	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP107	0.1-0.4	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP108	0-0.1	No	10	12,150	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP108	0-0.2	701.53	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP109	0-0.1	No	10	11,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP109	0-0.2	840.93	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP110	0-0.1	No	10	12,870	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP110	0-0.2	568.92	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP110	0.1-0.3	No	10	13,020	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP111	0-0.1	No	10	11,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP111	0-0.2	520.62	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP111	0.1-0.4	No	10	13,360	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP112	0-0.1	No	10	12,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP112	0-0.2	518.89	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP112	0.1-0.4	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP113	0-0.1	No	10	13,890	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP113	0-0.2	578.14	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP114	0-0.1	No	10	13,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP114	0-0.2	598.55	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP114	0.1-0.5	No	10	14,330	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP115	0-0.1	No	10	12,240	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP115	0-0.2	620.91	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP115	0.1-0.6	No	10	13,950	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP116	0-0.1	No	10	11,980	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP116	0-0.2	559.62	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP116	0.1-0.5	No	10	12,220	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP117	0-0.1	No	10	13,610	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP117	0-0.2	667.34	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP117	0.1-0.3	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP118	0-0.1	No	10	12,850	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP118	0-0.2	662.68	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP118	0.1-0.5	No	10	12,990	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP119	0-0.1	No	10	11,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP119	0-0.2	724.36	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP119	0.1-0.35	No	10	12,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP120	0-0.1	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP120	0-0.2	655.12	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP121	0-0.1	No	10	12,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP121	0-0.2	374.6	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP121	0.1-0.4	No	10	12,980	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
19/09/2023	BH122	0.05-0.25	No	2	2,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	BH122	0.05-0.2	456.14	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP123	0-0.1	No	10	14,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP123	0-0.2	842.12	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP124	0-0.1	No	10	15,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP124	0-0.2	578.42	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP124	0.1-0.3	No	10	14,950	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP125	0-0.1	No	10	10,910	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP125	0-0.2	724.53	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP125	0.1-0.4	No	10	13,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP126	0-0.1	No	10	11,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP126	0-0.2	634.33	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP126	0.1-0.3	No	10	12,150	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP127	0-0.1	No	10	11,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP127	0-0.2	671.68	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP127	0.1-0.3	No	10	12,230	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP128	0-0.1	No	10	12,480	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP128	0-0.2	546.27	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP128	0.1-0.4	No	10	13,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
21/09/2023	TP129	0-0.1	No	10	12,050	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP129	0-0.2	481.2	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
21/09/2023	TP129	0.1-0.5	No	10	13,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP130	0-0.1	No	10	14,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP130	0-0.2	629.12	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP131	0-0.1	No	10	13,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP131	0-0.2	716.72	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
22/09/2023	TP131	0.1-0.3	No	10	14,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
22/09/2023	TP132	0-0.1	No	10	14,500	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	334243	TP132	0-0.2	834.04	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001

Concentration above the SAC **VALUE**

JKEnvironments

TABLE S6
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																			
							AGED HEAVY METALS-EILs						EILs		ESLs								
				pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	8	18	104	5	77	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH101	0.1-0.3	F: Silty Clay	Coarse	8.5	11.5	37	13	25	31	13	18	55	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	Coarse	8.5	11.5	37	12	24	26	12	13	36	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH101 - [LAB_TRIP]	0.1-0.3	laboratory Triplicate	Coarse	8.5	11.5	37	8	24	22	14	14	40	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH101	0.6-0.95	F: Silty Clay	Coarse	8.5	11.5	37	5	27	16	12	21	25	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH102	0.02-0.2	F: Silty Clay	Coarse	8.5	11.5	37	10	16	16	9	16	50	<1	NA	<25	<50	**250**	**290**	<0.2	<0.5	<1	<1	<0.05
BH103	0.02-0.2	F: Silty Clay	Coarse	8.5	11.5	37	7	34	25	17	20	39	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH103	0.6-0.95	Silty Clay	Coarse	8.5	11.5	37	5	27	20	14	17	32	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH104	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	22	31	23	11	96	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH104	0.6-0.95	Silty Clay	Coarse	8.5	11.5	37	6	27	22	14	20	38	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH104	4.6-4.95	Silty Clay	Coarse	8.5	11.5	37	<4	27	16	27	19	49	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH105	0.05-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	25	14	13	14	30	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP106	0-0.2	F: Silty Sandy Clay	Coarse	8.5	11.5	37	<4	10	3	5	2	7	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP107	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	<4	17	11	9	9	23	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	<4	13	9	7	6	17	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP107	0.7-0.9	F: Silty Clay	Coarse	8.5	11.5	37	8	40	24	18	23	41	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP108	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	28	18	15	17	35	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP109	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	20	15	75	12	78	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP109	0.7-0.9	Silty Clay	Coarse	8.5	11.5	37	8	32	21	17	22	42	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP110	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	8	40	22	18	26	36	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP110	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	7	28	21	17	17	47	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP111	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	25	14	11	15	37	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	**0.4**
TP112	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	24	160	49	19	120	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP113	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	30	18	18	19	38	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP114	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	10	29	41	15	17	38	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP114 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	NA	NA	NA	NA	NA	NA	NA	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP114	0.8-1	Silty Clay	Coarse	8.5	11.5	37	7	35	21	15	28	35	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP115	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	26	18	23	16	43	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP115	1.1-1.3	Silty Clay	Coarse	8.5	11.5	37	9	28	27	16	20	69	<1	NA	<25	<50	**330**	**260**	<0.2	<0.5	<1	<1	<0.05
TP116	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	12	26	15	17	15	33	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	12	25	17	16	16	36	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP117	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	<4	14	11	12	7	35	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP118	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	<4	12	19	12	6	32	<1	<0.1	<25	**210**	**630**	**230**	<0.2	<0.5	<1	<1	<0.05
TP118	1-1.2	Silty Clay	Coarse	8.5	11.5	37	9	34	21	17	22	44	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP119	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	8	30	20	21	19	72	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP119	0.7-0.9	Silty Clay	Coarse	8.5	11.5	37	9	39	24	17	22	43	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP120	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	4	17	15	15	9	65	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	4	15	13	14	7	57	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP120	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	8	33	21	16	21	39	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP121	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	21	35	17	11	47	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH122	0.05-0.2	F: Silty Clay	Coarse	8.5	11.5	37	8	37	21	18	29	44	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP123	0-0.2	F: Silty Clayey Sand	Coarse	8.5	11.5	37	<4	10	3	5	4	16	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP123	0.6-0.8	Silty Sandy Clay	Coarse	8.5	11.5	37	4	21	12	11	14	28	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP124	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	<4	17	12	8	5	30	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP125	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	25	14	15	17	28	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP125	0.7-09	Silty Clay	Coarse	8.5	11.5	37	7	36	22	19	24	43	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP126	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	27	14	15	14	24	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP127	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	22	13	16	10	26	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP127	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	8	35	22	16	21	40	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP128	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	7	36	18	15	20	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	8	37	19	16	25	35	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP129	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	6	19	14	17	14	33	<1	NA	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<0.05
TP130	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	5	26	15	15	16	23	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP130	0.5-0.7	Silty Clay	Coarse	8.5	11.5	37	7	32	21	16	20	36	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP131	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	4	24	12	12	9	19	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP132	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	4	19	10	12	10	18	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP1	0-0.2	Duplicate of TP128	Coarse	8.5	11.5	37	7	31	18	16	21	29	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	8	34	19	18	24	33	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP2	0-0.2	Duplicate of TP129	Coarse	8.5	11.5	37	6	19	14	16	14	32	<1	NA	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<0.05
SDUP3	0-0.2	Duplicate of TP125	Coarse	8.5	11.5	37	5	25	15	16	17	30	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP4	0-0.2	Duplicate of TP119	Coarse	8.5	11.5	37	6	24	16	17	15	60	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP5	0-0.2	Duplicate of TP116	Coarse	8.5	11.5	37	7	24	13	11	13	27	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP5 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	6	23	13	13	14	26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP6	0-0.2	Duplicate of TP114	Coarse	8.5	11.5	37	8	24	14	10	15	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
Total Number of Samples				63	63	63	62	62	62	62	62	62	60	25	60	60	60	60	60	60	60	60	60
Maximum Value				8.5	11.5	37	13	40	160	75	29	120	<PQL	<PQL	<PQL	210	630	290	<PQL	<PQL	<PQL	<PQL	0.4

Concentration above the SAC — VALUE
Concentration above the PQL — **Bold**
The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

EIL AND ESL ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Sample Description	Soil Texture	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH101	0.1-0.3	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
BH101 - [LAB_TRIP]	0.1-0.3	laboratory Triplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	--	--	--	--	--	--	--	--	--	--	--
BH101	0.6-0.95	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH102	0.02-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH103	0.02-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
BH103	0.6-0.95	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH104	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
BH104	0.6-0.95	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH104	4.6-4.95	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH105	0.05-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP106	0-0.2	F: Silty Sandy Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP107	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP107	0.7-0.9	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP108	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP109	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP109	0.7-0.9	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP110	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP110	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP111	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP112	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP113	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP114	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP114 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	--	--	--	--	--	--	--	180	--	--	--	--	--	--	--	--	--
TP114	0.8-1	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP115	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP115	1.1-1.3	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP116	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP117	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP118	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP118	1-1.2	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP119	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP119	0.7-0.9	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP120	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP120	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP121	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
BH122	0.05-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP123	0-0.2	F: Silty Clayey Sand	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP123	0.6-0.8	Silty Sandy Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP124	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP125	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP125	0.7-09	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP126	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP127	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP127	0.6-0.8	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP128	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP129	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP130	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP130	0.5-0.7	Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
TP131	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
TP132	0-0.2	F: Silty Clay	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
SDUP1	0-0.2	Duplicate of TP128	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20
SDUP2	0-0.2	Duplicate of TP129	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
SDUP3	0-0.2	Duplicate of TP125	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
SDUP4	0-0.2	Duplicate of TP119	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
SDUP5	0-0.2	Duplicate of TP116	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	--	180	120	300	2800	50	85	70	105	20
SDUP5 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Coarse	8.5	11.5	37	100	410	230	1200	280	780	--	--	--	--	--	--	--	--	--	--	--
SDUP6	0-0.2	Duplicate of TP114	Coarse	8.5	11.5	37	100	410	230	1200	280	780	170	180	180	120	300	2800	50	85	70	105	20

JKEnvironments

TABLE S7
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total	TRH					BTEX COMPOUNDS				
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful	Total Scheduled	PCBs	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	ASBESTOS FIBRES
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	50	50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	50	50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	50	50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	50	50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																									
BH101	0.1-0.3	F: Silty Clay	**13**	<0.4	**25**	**31**	**13**	<0.1	**18**	**55**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH101 - [LAB_DUP]	0.1-0.3	Laboratory Duplicate	**12**	<0.4	**24**	**26**	**12**	<0.1	**13**	**36**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH101 - [LAB_TRIP]	0.1-0.3	laboratory Triplicate	**8**	<0.4	**24**	**22**	**14**	<0.1	**14**	**40**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH101	0.6-0.95	F: Silty Clay	**5**	<0.4	**27**	**16**	**12**	<0.1	**21**	**25**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH102	0.02-0.2	F: Silty Clay	**10**	<0.4	**16**	**16**	**9**	<0.1	**16**	**50**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	**120**	**240**	**360**	<0.2	<0.5	<1	<1	Not Detected
BH103	0.02-0.2	F: Silty Clay	**7**	<0.4	**34**	**25**	**17**	<0.1	**20**	**39**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH103	0.6-0.95	Silty Clay	**5**	<0.4	**27**	**20**	**14**	<0.1	**17**	**32**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH104	0-0.2	F: Silty Clay	**6**	<0.4	**22**	**31**	**23**	**0.1**	**11**	**96**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH104	0.6-0.95	Silty Clay	**6**	<0.4	**27**	**22**	**14**	<0.1	**20**	**38**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH104	4.6-4.95	Silty Clay	<4	<0.4	**27**	**16**	**27**	<0.1	**19**	**49**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH105	0.05-0.2	F: Silty Clay	**6**	<0.4	**25**	**14**	**13**	<0.1	**14**	**30**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP106	0-0.2	F: Silty Sandy Clay	<4	<0.4	**10**	**3**	**5**	<0.1	**2**	**7**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP107	0-0.2	F: Silty Clay	<4	<0.4	**17**	**11**	**9**	<0.1	**9**	**23**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP107 - [LAB_DUP]	0-0.2	Laboratory Duplicate	<4	<0.4	**13**	**9**	**7**	<0.1	**6**	**17**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP107	0.7-0.9	F: Silty Clay	**8**	<0.4	**40**	**24**	**18**	<0.1	**23**	**41**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP108	0-0.2	F: Silty Clay	**6**	<0.4	**28**	**18**	**15**	<0.1	**17**	**35**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP109	0-0.2	F: Silty Clay	**5**	<0.4	**20**	**15**	**75**	<0.1	**12**	**78**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP109	0.7-0.9	Silty Clay	**8**	<0.4	**32**	**21**	**17**	<0.1	**22**	**42**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP110	0-0.2	F: Silty Clay	**8**	<0.4	**40**	**22**	**18**	<0.1	**26**	**36**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP110	0.6-0.8	Silty Clay	**7**	<0.4	**28**	**21**	**17**	<0.1	**17**	**47**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP111	0-0.2	F: Silty Clay	**6**	<0.4	**25**	**14**	**11**	<0.1	**15**	**37**	**2**	**0.4**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP112	0-0.2	F: Silty Clay	**6**	<0.4	**24**	**160**	**49**	<0.1	**19**	**120**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP113	0-0.2	F: Silty Clay	**6**	<0.4	**30**	**18**	**18**	<0.1	**19**	**38**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP114	0-0.2	F: Silty Clay	**10**	<0.4	**29**	**41**	**15**	<0.1	**17**	**38**	<0.05	<0.05	<0.1	<0.1	<0.1	**0.9**	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP114 - [LAB_DUP]	0-0.2	Laboratory Duplicate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	**1.2**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP114	0.8-1	Silty Clay	**7**	<0.4	**35**	**21**	**15**	<0.1	**28**	**35**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP115	0-0.2	F: Silty Clay	**6**	<0.4	**26**	**18**	**23**	<0.1	**16**	**43**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP115	1.1-1.3	Silty Clay	**9**	<0.4	**28**	**27**	**16**	<0.1	**20**	**69**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	**150**	**280**	**430**	<0.2	<0.5	<1	<1	NA
TP116	0-0.2	F: Silty Clay	**12**	<0.4	**26**	**15**	**17**	<0.1	**15**	**33**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP116 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**12**	<0.4	**25**	**17**	**16**	<0.1	**16**	**36**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP117	0-0.2	F: Silty Clay	<4	<0.4	**14**	**11**	**12**	<0.1	**7**	**35**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP118	0-0.2	F: Silty Clay	<4	<0.4	**12**	**19**	**12**	<0.1	**6**	**32**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	**77**	**520**	**390**	**987**	<0.2	<0.5	<1	<1	Not Detected
TP118	1-1.2	Silty Clay	**9**	<0.4	**34**	**21**	**17**	<0.1	**22**	**44**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP119	0-0.2	F: Silty Clay	**8**	<0.4	**30**	**20**	**21**	<0.1	**19**	**72**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP119	0.7-0.9	Silty Clay	**9**	<0.4	**39**	**24**	**17**	<0.1	**22**	**43**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP120	0-0.2	F: Silty Clay	**4**	<0.4	**17**	**15**	**15**	**0.5**	**9**	**65**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP120 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**4**	<0.4	**15**	**13**	**14**	**0.5**	**7**	**57**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP120	0.6-0.8	Silty Clay	**8**	<0.4	**33**	**21**	**16**	<0.1	**21**	**39**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP121	0-0.2	F: Silty Clay	**5**	<0.4	**21**	**35**	**17**	<0.1	**11**	**47**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH122	0.05-0.2	F: Silty Clay	**8**	<0.4	**37**	**21**	**18**	<0.1	**29**	**44**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP123	0-0.2	F: Silty Clayey Sand	<4	<0.4	**10**	**3**	**5**	<0.1	**4**	**16**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP123	0.6-0.8	Silty Sandy Clay	**4**	<0.4	**21**	**12**	**11**	<0.1	**14**	**28**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP124	0-0.2	F: Silty Clay	<4	<0.4	**17**	**12**	**8**	<0.1	**5**	**30**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP125	0-0.2	F: Silty Clay	**5**	<0.4	**25**	**14**	**15**	<0.1	**17**	**28**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP125	0.7-09	Silty Clay	**7**	<0.4	**36**	**22**	**19**	<0.1	**24**	**43**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP126	0-0.2	F: Silty Clay	**6**	<0.4	**27**	**14**	**15**	<0.1	**14**	**24**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP127	0-0.2	F: Silty Clay	**5**	<0.4	**22**	**13**	**16**	<0.1	**10**	**26**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP127	0.6-0.8	Silty Clay	**8**	<0.4	**35**	**22**	**16**	<0.1	**21**	**40**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP128	0-0.2	F: Silty Clay	**7**	<0.4	**36**	**18**	**15**	<0.1	**20**	**34**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP128 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**8**	<0.4	**37**	**19**	**16**	<0.1	**25**	**35**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP129	0-0.2	F: Silty Clay	**6**	<0.4	**19**	**14**	**17**	<0.1	**14**	**33**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP130	0-0.2	F: Silty Clay	**5**	<0.4	**26**	**15**	**15**	<0.1	**16**	**23**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP130	0.5-0.7	Silty Clay	**7**	<0.4	**32**	**21**	**16**	<0.1	**20**	**36**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP131	0-0.2	F: Silty Clay	**4**	<0.4	**24**	**12**	**12**	<0.1	**9**	**19**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP132	0-0.2	F: Silty Clay	**4**	<0.4	**19**	**10**	**12**	<0.1	**10**	**18**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
SDUP1	0-0.2	Duplicate of TP128	**7**	<0.4	**31**	**18**	**16**	<0.1	**21**	**29**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**8**	<0.4	**34**	**19**	**18**	<0.1	**24**	**33**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP2	0-0.2	Duplicate of TP129	**6**	<0.4	**19**	**14**	**16**	<0.1	**14**	**32**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	**100**	**100**	<0.2	<0.5	<1	<1	NA
SDUP3	0-0.2	Duplicate of TP125	**5**	<0.4	**25**	**15**	**16**	<0.1	**17**	**30**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP4	0-0.2	Duplicate of TP119	**6**	<0.4	**24**	**16**	**17**	<0.1	**15**	**60**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP5	0-0.2	Duplicate of TP116	**7**	<0.4	**24**	**13**	**11**	<0.1	**13**	**27**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP5 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**6**	<0.4	**23**	**13**	**13**	<0.1	**14**	**26**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP6	0-0.2	Duplicate of TP114	**8**	<0.4	**24**	**14**	**10**	<0.1	**15**	**34**	<0.05	<0.05	<0.1	<0.1	<0.1	**0.4**	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
Total Number of Samples			62	62	62	62	62	62	62	62	60	60	25	24	24	25	24	60	60	60	60	60	60	60	60	60	32
Maximum Value			13	<PQL	40	160	75	0.5	29	120	2	0.4	<PQL	<PQL	<PQL	1.2	<PQL	<PQL	77	520	390	987	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the CT1	**VALUE**
Concentration above SCC1	**VALUE**
Concentration above the SCC2	**VALUE**
Concentration above PQL	**Bold**

TABLE G1
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO ECOLOGICAL GILs SAC
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	ANZG 2018 Fresh Waters	SAMPLES							
			MW1	MW1 [LAB_DUP]	MW3	MW101	MW103	MW104	GWDUP1	GWDUP2
Inorganic Compounds and Parameters										
pH	-	6.5 - 8.5	7	7	6.5	6.8	7.1	6.9	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**16000**	**16000**	**1600**	**3100**	**1500**	**3500**	NA	NA
Metals and Metalloids										
Arsenic (As III)	1	24	**4**	**4**	<1	**2**	<1	<1	<1	<1
Cadmium	0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (SAC for Cr III adopted)	1	3.3	<1	<1	**1**	<1	**2**	<1	<1	<1
Copper	1	1.4	**6**	**6**	**1**	**1**	<1	**1**	<1	**3**
Lead	1	3.4	<1	<1	<1	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	0.06	<0.05	<0.05	**0.06**	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	11	**24**	**23**	**2**	**6**	**1**	**3**	**3**	**1**
Zinc	1	8	**13**	**12**	**18**	**27**	**10**	**9**	**8**	**16**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)										
Benzene	1	950	<1	NA	<1	<1	<1	<1	<1	<1
Toluene	1	180	<1	NA	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	80	<1	NA	<1	<1	<1	<1	<1	<1
m+p-xylene	2	75	<2	NA	<2	<2	<2	<2	<2	<2
o-xylene	1	350	<1	NA	<1	<1	<1	<1	<1	<1
Total xylenes	2	NSL	<2	NA	<2	<2	<2	<2	<2	<2
Total Recoverable Hydrocarbons (TRHs)										
TRH F1	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10
TRH F2	50	NSL	<50	NA	<50	<50	<50	<50	<50	<50
TRH F3	100	NSL	<100	NA	<100	<100	<100	<100	<100	<100
TRH F4	100	NSL	<100	NA	<100	<100	<100	<100	<100	<100
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	0.2	16	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	0.6	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	0.01	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**
GIL >PQL	Red

JKEnvironments

TABLE G2
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO HUMAN CONTACT GILs
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	Recreational (10 x NHMRC ADWG)	SAMPLES							
			MW1	MW1 [LAB_DUP]	MW3	MW101	MW103	MW104	GWDUP1	GWDUP2
Inorganic Compounds and Parameters										
pH	-	6.5 - 8.5	7	7	6.5	6.8	7.1	6.9	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**16000**	**16000**	**1600**	**3100**	**1500**	**3500**	NA	NA
Metals and Metalloids										
Arsenic (As III)	1	100	**4**	**4**	<1	**2**	<1	<1	<1	<1
Cadmium	0.1	20	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (total)	1	500	<1	<1	**1**	<1	**2**	<1	<1	<1
Copper	1	20000	**6**	**6**	**1**	**1**	<1	**1**	<1	**3**
Lead	1	100	<1	<1	<1	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	10	<0.05	<0.05	**0.06**	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	200	**24**	**23**	**2**	**6**	**1**	**3**	**3**	**1**
Zinc	1	30000	**13**	**12**	**18**	**27**	**10**	**9**	**8**	**16**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)										
Benzene	1	10	<1	NA	<1	<1	<1	<1	<1	<1
Toluene	1	8000	<1	NA	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	3000	<1	NA	<1	<1	<1	<1	<1	<1
m+p-xylene	2	NSL	<2	NA	<2	<2	<2	<2	<2	<2
o-xylene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1
Total xylenes	2	6000	<2	NA	<2	<2	<2	<2	<2	<2
Total Recoverable Hydrocarbons (TRHs)										
TRH F1	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10
TRH F2	50	NSL	<50	NA	<50	<50	<50	<50	<50	<50
TRH F3	100	NSL	<100	NA	<100	<100	<100	<100	<100	<100
TRH F4	100	NSL	<100	NA	<100	<100	<100	<100	<100	<100
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	0.2	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**
GIL >PQL	Red

TABLE G3
GROUNDWATER LABORATORY RESULTS COMPARED TO HSLs
All data in µg/L unless stated otherwise

				C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services				10	50	1	1	1	2	1	
NEPM 2013 - Land Use Category				**HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL**							
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**								
MW1	3.64	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	0
MW3	3.69	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	0
MW101	3.67	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	1.5
MW103	3.69	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	1.1
MW104	3.64	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	0.7
GWDUP1	3.64	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
GWDUP2	3.69	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
Total Number of Samples				7	7	7	7	7	7	7	5
Maximum Value				<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	1.5

Concentration above the SAC **VALUE**
Site specific assesment (SSA) required **VALUE**
Concentration above the PQL **Bold**
The guideline corresponding to the elevated value is highlighted in grey in the Groundwater Assessment Criteria Table below

HSL GROUNDWATER ASSESSMENT CRITERIA

Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
MW1	3.64	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW3	3.69	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW101	3.67	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW103	3.69	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW104	3.64	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
GWDUP1	3.64	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
GWDUP2	3.69	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL

TABLE Q1
SOIL QA/QC SUMMARY

			TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene
	PQL Envirolab SYD		25	50	100	100	0.2	0.5	1	2	1
	PQL Envirolab VIC		25	50	100	100	0.2	0.5	1	2	1
Intra laboratory duplicate	TP128	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	SDUP1	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra laboratory duplicate	TP129	0-0.2	<25	<50	150	<100	<0.2	<0.5	<1	<2	<1
	SDUP2	0-0.2	<25	<50	150	<100	<0.2	<0.5	<1	<2	<1
	MEAN		nc	nc	150	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	0%	nc	nc	nc	nc	nc	nc
Intra laboratory duplicate	TP125	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	SDUP3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP119	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	SDUP4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP116	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	SDUP5	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP114	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	SDUP6	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc
Field Blank	TB-S1 18/09/23	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
Field Blank	TB-S2 25/09/23	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1
Field Rinsate	FR1-HA 22/09/23	µg/L	<10	<50	<100	<100	<1	<1	<1	<2	<1
Trip Spike	TS-S1 18/09/23		-	-	-	-	98%	99%	98%	97%	96%
Trip Spike	TS-S2 25/09/23		-	-	-	-	100%	101%	102%	102%	102%

			Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene
	PQL Envirolab SYD		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.05	0.1	0.1	0.1
	PQL Envirolab VIC		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.05	0.1	0.1	0.1
Intra laboratory duplicate	TP128	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	SDUP1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra laboratory duplicate	TP129	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	SDUP2	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra laboratory duplicate	TP125	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	SDUP3	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP119	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	SDUP4	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP116	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	SDUP5	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP114	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	SDUP6	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field Blank	TB-S1 18/09/23	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
Field Blank	TB-S2 25/09/23	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
Field Rinsate	FR1-HA 22/09/23	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
Trip Spike	TS-S1 18/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	TS-S2 25/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			HCB	alpha- BHC	gamma- BHC	beta- BHC	Heptachlor	delta- BHC	Aldrin	Heptachlor Epoxide	Gamma- Chlordane	alpha- chlordane	Endosulfan I	pp- DDE	Dieldrin	Endrin	pp- DDD	Endosulfan II	pp- DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
	PQL Envirolab SYD		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PQL Envirolab VIC		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Intra laboratory duplicate	TP128	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	SDUP1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra laboratory duplicate	TP129	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SDUP2	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra laboratory duplicate	TP125	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SDUP3	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP119	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SDUP4	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP116	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	SDUP5	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP114	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	SDUP6	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.65	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	77%	nc	nc	nc	nc	nc	nc	nc
Field Blank	TB-S1 18/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Blank	TB-S2 25/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Rinsate	FR1-HA 22/09/23	µg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	TS-S1 18/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	TS-S2 25/09/23		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

			Azinphos-methyl (Guthion)	Bromophos-ethyl	Chlorpyriphos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel
	PQL Envirolab SYD		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	PQL Envirolab VIC		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Intra laboratory duplicate	TP128	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	SDUP1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra laboratory duplicate	TP129	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SDUP2	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra laboratory duplicate	TP125	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SDUP3	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP119	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	SDUP4	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP116	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	SDUP5	0-0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter laboratory duplicate	TP114	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	SDUP6	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field Blank	TB-S1 18/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Blank	TB-S2 25/09/23	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Rinsate	FR1-HA 22/09/23	µg/L	-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	TS-S1 18/09/23		-	-	-	-	-	-	-	-	-	-	-	-
Trip Spike	TS-S2 25/09/23		-	-	-	-	-	-	-	-	-	-	-	-

			Total PCBS	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD		0.1	4	0.4	1	1	1	0.1	1	1
	PQL Envirolab VIC		0.1	4	0.4	1	1	1	0.1	1	1
Intra laboratory duplicate	TP128	0-0.2	<0.1	7	<0.4	36	18	15	<0.1	20	34
	SDUP1	0-0.2	<0.1	7	<0.4	31	18	16	<0.1	21	29
	MEAN		nc	7	nc	33.5	18	15.5	nc	20.5	31.5
	RPD %		nc	0%	nc	15%	0%	6%	nc	5%	16%
Intra laboratory duplicate	TP129	0-0.2	NA	6	<0.4	19	14	17	<0.1	14	33
	SDUP2	0-0.2	NA	6	<0.4	19	14	16	<0.1	14	32
	MEAN		nc	6	nc	19	14	16.5	nc	14	32.5
	RPD %		nc	0%	nc	0%	0%	6%	nc	0%	3%
Intra laboratory duplicate	TP125	0-0.2	NA	5	<0.4	25	14	15	<0.1	17	28
	SDUP3	0-0.2	NA	5	<0.4	25	15	16	<0.1	17	30
	MEAN		nc	5	nc	25	14.5	15.5	nc	17	29
	RPD %		nc	0%	nc	0%	7%	6%	nc	0%	7%
Inter laboratory duplicate	TP119	0-0.2	NA	8	<0.4	30	20	21	<0.1	19	72
	SDUP4	0-0.2	NA	6	<0.4	24	16	17	<0.1	15	60
	MEAN		nc	7	nc	27	18	19	nc	17	66
	RPD %		nc	29%	nc	22%	22%	21%	nc	24%	18%
Inter laboratory duplicate	TP116	0-0.2	<0.1	12	<0.4	26	15	17	<0.1	15	33
	SDUP5	0-0.2	NA	7	<0.4	24	13	11	<0.1	13	27
	MEAN		nc	9.5	nc	25	14	14	nc	14	30
	RPD %		nc	53%	nc	8%	14%	43%	nc	14%	20%
Inter laboratory duplicate	TP114	0-0.2	<0.1	10	<0.4	29	41	15	<0.1	17	38
	SDUP6	0-0.2	<0.1	8	<0.4	24	14	10	<0.1	15	34
	MEAN		nc	9	nc	26.5	27.5	12.5	nc	16	36
	RPD %		nc	22%	nc	19%	98%	40%	nc	13%	11%
Field Blank	TB-S1 18/09/23	-	-	<4	<0.4	3	<1	3	<0.1	<1	3
Field Blank	TB-S2 25/09/23	-	-	<4	<0.4	4	<1	4	<0.1	<1	3
Field Rinsate	FR1-HA 22/09/23	µg/L	-	<0.05	<0.01	<0.01	0.1	<0.03	<0.0005	<0.02	<0.02
Trip Spike	TS-S1 18/09/23		-	-	-	-	-	-	-	-	-
Trip Spike	TS-S2 25/09/23		-	-	-	-	-	-	-	-	-

Result outside of QA/QC acceptance criteria

Rinsate metals results in mg/L

TABLE Q2
GROUNDWATER QA/QC SUMMARY

		TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cene	Benzo(g,h,i)perylene	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD	*10*	*50*	*100*	*100*	*1*	*1*	*1*	*2*	*1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
	PQL Envirolab VIC	*10*	*50*	*100*	*100*	*1*	*1*	*1*	*2*	*1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
Intra	MW104	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	1	<1	<0.05	3	9
laboratory	GWDUP1	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	<1	<1	<0.05	3	8
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.75	nc	nc	3	8.5
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	67%	nc	nc	0%	12%
Inter	MW3	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	1	1	<1	0.06	2	18
laboratory	GWDUP2	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	3	<1	<0.05	1	16
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.75	2	nc	0.0425	1.5	17
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	67%	100%	nc	82%	67%	12%
Field	TB-W1	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	<1	<1	<0.05	<1	<1
Blank	25/09/2023																																
Field	FR2-DIP	15	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	110	<1	<0.05	<1	6
Rinsate	26/09/2023																																
Trip	TS-W1	-	-	-	-	106%	102%	115%	114%	111%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Spike	25/09/2023																																

Result outside of QA/QC acceptance criteria — Value

PSI Results Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration
ACM:	Asbestos Containing Material
ADWG:	AustralianDrinking Water Guidelines
AF:	Asbestos Fines
ANZG	Australian and New Zealand Guidelines
B(a)P:	Benzo(a)pyrene
CEC:	Cation Exchange Capacity
CRC:	Cooperative Research Centre
CT:	Contaminant Threshold
EILs:	Ecological Investigation Levels
ESLs:	Ecological Screening Levels
FA:	Fibrous Asbestos
GIL:	Groundwater Investigation Levels
GSW:	General Solid Waste
HILs:	Health Investigation Levels
HSLs:	Health Screening Levels
HSL-SSA:	Health Screening Level-SiteSpecific Assessment
kg/L	kilograms per litre
NA:	Not Analysed
NC:	Not Calculated
NEPM:	National Environmental Protection Measure
NHMRC:	National Health and Medical Research Council
NL:	Not Limiting
NSL:	No Set Limit
OCP:	Organochlorine Pesticides
OPP:	Organophosphorus Pesticides
PAHs:	Polycyclic Aromatic Hydrocarbons
%w/w:	weight per weight
ppm:	Parts per million
PCBs:	Polychlorinated Biphenyls
PCE:	Perchloroethylene (Tetrachloroethylene or Teterachloroethene)
pH_{KCL} :	pH of filtered 1:20, 1M KCL extract, shaken overnight
pH_{ox} :	pH of filtered 1:20 1M KCl after peroxide digestion
PQL:	Practical Quantitation Limit
RS:	Rinsate Sample
RSL:	Regional Screening Levels
RSW:	Restricted Solid Waste
SAC:	Site Assessment Criteria
SCC:	Specific Contaminant Concentration
S_{Cr}:	Chromium reducible sulfur
S_{POS}:	Peroxide oxidisable Sulfur
SSA:	Site Specific Assessment
SSHSLs:	Site Specific Health Screening Levels
TAA:	Total Actual Acidity in 1M KCL extract titrated to pH6.5
TB:	Trip Blank
TCA:	1,1,1 Trichloroethane (methyl chloroform)
TCE:	Trichloroethylene (Trichloroethene)
TCLP:	Toxicity Characteristics Leaching Procedure
TPA:	Total Potential Acidity, 1M KCL peroxide digest
TS:	Trip Spike
TRH:	Total Recoverable Hydrocarbons
TSA:	Total Sulfide Acidity (TPA-TAA)
UCL:	Upper Level Confidence Limit on Mean Valu
USEPA	United States Environmental Protection Agency
VOCC:	Volatile Organic Chlorinated Compounds
WHO:	World Health Organisation

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also refered to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with low traffic have been quoted).

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

QA/QC Table:

- Field blank, Inter and Intra laboratory duplicate results are reported in mg/kg.
- Trip spike results are reported as percentage recovery.
- Field rinsate results are reported in µg/L.

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TABLE S1
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																				
BH1	0-0.2	F: Silty Clay	**4**	<0.4	**18**	**13**	**13**	<0.1	**9**	**27**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	**4**	<0.4	**18**	**12**	**13**	<0.1	**10**	**26**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH1	0.3-0.5	Silty Clay	**4**	<0.4	**25**	**16**	**16**	<0.1	**12**	**24**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	1.3-1.5	Silty Clay	**7**	<0.4	**27**	**21**	**16**	<0.1	**15**	**40**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0-0.2	F: Silty Clay	<4	<0.4	**16**	**12**	**11**	<0.1	**9**	**21**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH2	1-1.4	Silty Clay	**7**	<0.4	**29**	**21**	**17**	<0.1	**17**	**42**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH3	0-0.2	F: Silty Clay	<4	<0.4	**14**	**9**	**11**	<0.1	**8**	**49**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH3	0.3-0.5	Silty Clay	<4	<0.4	**18**	**11**	**8**	<0.1	**11**	**19**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH4	0-0.2	F: Clayey Silt	<4	<0.4	**14**	**11**	**8**	<0.1	**9**	**37**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH4	0.3-0.5	Silty Clay	**5**	<0.4	**25**	**15**	**12**	<0.1	**17**	**23**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH5	0-0.2	F: Silty Sand	**5**	<0.4	**10**	**9**	**7**	<0.1	**6**	**26**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH5	0.3-0.5	Silty Clay	<4	<0.4	**20**	**12**	**11**	<0.1	**12**	**22**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH6	0-0.5	Sandy Silty Clay	**5**	<0.4	**28**	**20**	**15**	<0.1	**17**	**36**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	**5**	<0.4	**28**	**20**	**16**	<0.1	**16**	**37**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH7	0-0.2	F: Sandy Silty Clay	**5**	<0.4	**11**	**15**	**7**	<0.1	**11**	**65**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH7	0.2-0.7	Sandy Silty Clay	**5**	<0.4	**25**	**22**	**14**	<0.1	**27**	**46**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH8	0-0.2	F: Silty Clay	<4	<0.4	**23**	**15**	**16**	<0.1	**14**	**31**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH8	0.8-1	Sandy Silty Clay	**6**	<0.4	**28**	**29**	**16**	<0.1	**20**	**66**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH9	0-0.2	F: Sandy Silt	<4	<0.4	**18**	**14**	**12**	<0.1	**11**	**42**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH9	0.5-0.9	Silty Clay	**6**	<0.4	**26**	**28**	**14**	<0.1	**20**	**71**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP10	0-0.2	F: Silty Clay	<4	<0.4	**16**	**10**	**11**	<0.1	**8**	**24**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	<4	<0.4	**16**	**10**	**10**	<0.1	**8**	**23**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP10	0.3-0.6	Silty Clay	**5**	<0.4	**23**	**17**	**12**	<0.1	**14**	**25**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP11	0-0.2	F: Silty Clay	<4	<0.4	**18**	**12**	**11**	<0.1	**9**	**24**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP11	0.4-0.6	Silty Clay	**7**	<0.4	**30**	**25**	**16**	<0.1	**19**	**47**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP12	0-0.2	F: Silty Clay	<4	<0.4	**11**	**8**	**7**	<0.1	**6**	**22**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP12	0.5-0.7	F: Silty Clay	**6**	<0.4	**31**	**18**	**16**	<0.1	**18**	**32**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP1	0-0.2	Duplicate of BH1	**5**	<0.4	**21**	**14**	**15**	<0.1	**11**	**31**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP2	0-0.2	Duplicate of BH3	<4	<0.4	**17**	**11**	**11**	<0.1	**9**	**56**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP3	0-0.2	Duplicate of BH2	<4	<0.4	**18**	**13**	**10**	<0.1	**10**	**21**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	NA	NA	NA	NA	NA	NA	NA	NA	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	<0.1	NA	NA
SDUP4	0-0.2	Duplicate of BH4	<4	<0.4	**13**	**11**	**7**	<0.1	**8**	**34**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			31	31	31	31	31	31	31	31	32	32	17	17	17	17	17	17	17	18	17	12
Maximum Value			7	<PQL	31	29	17	<PQL	27	71	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**

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TABLE S2
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category					**HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL**							
Sample Reference	**Sample Depth**	**Sample Description**	**Depth Category**	**Soil Category**								
BH1	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
BH1	0.3-0.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH1	1.3-1.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH2	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH2	1-1.4	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH3	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH3	0.3-0.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH4	0-0.2	F: Clayey Silt	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH4	0.3-0.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.1
BH5	0-0.2	F: Silty Sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.1
BH5	0.3-0.5	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
BH6	0-0.5	Sandy Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
BH7	0-0.2	F: Sandy Silty Clay	0m to <1m	Sand	<25	**130**	<0.2	<0.5	<1	<1	<1	0
BH7	0.2-0.7	Sandy Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH8	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH8	0.8-1	Sandy Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH9	0-0.2	F: Sandy Silt	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH9	0.5-0.9	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
TP10	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
TP10	0.3-0.6	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
TP11	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
TP11	0.4-0.6	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.4
TP12	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
TP12	0.5-0.7	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
SDUP1	0-0.2	Duplicate of BH1	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP2	0-0.2	Duplicate of BH3	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP3	0-0.2	Duplicate of BH2	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP4	0-0.2	Duplicate of BH4	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
Total Number of Samples					32	32	32	32	32	32	32	24
Maximum Value					<PQL	130	<PQL	<PQL	<PQL	<PQL	<PQL	2.4

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**
The guideline corresponding to the concentration above the SAC is highlighted in grey in the Site Assessment Criteria Table below

HSL SOIL ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
BH1	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1	0.3-0.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1	1.3-1.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH2	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH2	1-1.4	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH3	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH3	0.3-0.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH4	0-0.2	F: Clayey Silt	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH4	0.3-0.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH5	0-0.2	F: Silty Sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH5	0.3-0.5	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH6	0-0.5	Sandy Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH7	0-0.2	F: Sandy Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH7	0.2-0.7	Sandy Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH8	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH8	0.8-1	Sandy Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH9	0-0.2	F: Sandy Silt	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH9	0.5-0.9	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP10	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP10	0.3-0.6	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP11	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP11	0.4-0.6	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP12	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
TP12	0.5-0.7	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP1	0-0.2	Duplicate of BH1	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP2	0-0.2	Duplicate of BH3	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP3	0-0.2	Duplicate of BH2	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP4	0-0.2	Duplicate of BH4	0m to <1m	Sand	45	110	0.5	160	55	40	3

TABLE S3
SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS
All data in mg/kg unless stated otherwise

			C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			**RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE**			
Sample Reference	**Sample Depth**	**Soil Texture**				
BH1	0-0.2	Coarse	<25	<50	**190**	<100
BH1 - [LAB_DUP]	0-0.2	Coarse	<25	<50	**330**	<100
BH1	0.3-0.5	Coarse	<25	<50	<100	<100
BH1	1.3-1.5	Coarse	<25	<50	<100	<100
BH2	0-0.2	Coarse	<25	<50	<100	<100
BH2	1-1.4	Coarse	<25	<50	<100	<100
BH3	0-0.2	Coarse	<25	<50	<100	<100
BH3	0.3-0.5	Coarse	<25	<50	<100	<100
BH4	0-0.2	Coarse	<25	<50	<100	<100
BH4	0.3-0.5	Coarse	<25	<50	<100	<100
BH5	0-0.2	Coarse	<25	<50	<100	<100
BH5	0.3-0.5	Coarse	<25	<50	<100	<100
BH6	0-0.5	Coarse	<25	<50	<100	<100
BH6 - [LAB_DUP]	0-0.5	Coarse	<25	<50	<100	<100
BH7	0-0.2	Coarse	<25	**130**	**540**	**350**
BH7	0.2-0.7	Coarse	<25	<50	<100	<100
BH8	0-0.2	Coarse	<25	<50	<100	<100
BH8	0.8-1	Coarse	<25	<50	<100	<100
BH9	0-0.2	Coarse	<25	<50	**160**	<100
BH9	0.5-0.9	Coarse	<25	<50	<100	<100
TP10	0-0.2	Coarse	<25	<50	<100	<100
TP10 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP10	0.3-0.6	Coarse	<25	<50	<100	<100
TP11	0-0.2	Coarse	<25	<50	<100	<100
TP11	0.4-0.6	Coarse	<25	<50	<100	<100
TP12	0-0.2	Coarse	<25	<50	<100	<100
TP12	0.5-0.7	Coarse	<25	<50	<100	<100
SDUP1	0-0.2	Coarse	<25	<50	**150**	<100
SDUP2	0-0.2	Coarse	<25	<50	<100	<100
SDUP3	0-0.2	Coarse	<25	<50	<100	<100
SDUP3 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
SDUP4	0-0.2	Coarse	<25	<50	<100	<100
Total Number of Samples			32	32	32	32
Maximum Value			<PQL	130	540	350

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**

MANAGEMENT LIMIT ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Soil Texture	C_6-C_{10} (F1) plus BTEX	>C_{10}-C_{16} (F2) plus napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
BH1	0-0.2	Coarse	700	1000	2500	10000
BH1 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
BH1	0.3-0.5	Coarse	700	1000	2500	10000
BH1	1.3-1.5	Coarse	700	1000	2500	10000
BH2	0-0.2	Coarse	700	1000	2500	10000
BH2	1-1.4	Coarse	700	1000	2500	10000
BH3	0-0.2	Coarse	700	1000	2500	10000
BH3	0.3-0.5	Coarse	700	1000	2500	10000
BH4	0-0.2	Coarse	700	1000	2500	10000
BH4	0.3-0.5	Coarse	700	1000	2500	10000
BH5	0-0.2	Coarse	700	1000	2500	10000
BH5	0.3-0.5	Coarse	700	1000	2500	10000
BH6	0-0.5	Coarse	700	1000	2500	10000
BH6 - [LAB_DUP]	0-0.5	Coarse	700	1000	2500	10000
BH7	0-0.2	Coarse	700	1000	2500	10000
BH7	0.2-0.7	Coarse	700	1000	2500	10000
BH8	0-0.2	Coarse	700	1000	2500	10000
BH8	0.8-1	Coarse	700	1000	2500	10000
BH9	0-0.2	Coarse	700	1000	2500	10000
BH9	0.5-0.9	Coarse	700	1000	2500	10000
TP10	0-0.2	Coarse	700	1000	2500	10000
TP10 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP10	0.3-0.6	Coarse	700	1000	2500	10000
TP11	0-0.2	Coarse	700	1000	2500	10000
TP11	0.4-0.6	Coarse	700	1000	2500	10000
TP12	0-0.2	Coarse	700	1000	2500	10000
TP12	0.5-0.7	Coarse	700	1000	2500	10000
SDUP1	0-0.1	Coarse	700	1000	2500	10000
SDUP2	0-0.1	Coarse	700	1000	2500	10000
SDUP3	0-0.1	Coarse	700	1000	2500	10000
SDUP3 - [LAB_DUP]	0-0.1	Coarse	700	1000	2500	10000
SDUP4	0-0.2	Coarse	700	1000	2500	10000

TABLE S4
SOIL LABORATORY RESULTS COMPARED T0 DIRECT CONTACT CRITERIA
All data in mg/kg unless stated otherwise

Analyte		C_6-C_{10}	>C_{10}-C_{16}	>C_{16}-C_{34}	>C_{34}-C_{40}	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services		25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 -Direct contact Criteria		4,400	3,300	4,500	6,300	100	14,000	4,500	12,000	1,400	
Site Use		**RESIDENTIAL WITH ACCESSIBLE SOIL- DIRECT SOIL CONTACT**									
Sample Reference	**Sample Depth**										
BH1	0-0.2	<25	<50	**190**	<100	<0.2	<0.5	<1	<1	<1	0
BH1 - [LAB_DUP]	0-0.2	<25	<50	**330**	<100	<0.2	<0.5	<1	<1	<1	NA
BH1	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH1	1.3-1.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
BH2	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH2	1-1.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH3	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH4	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.1**
BH5	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.1**
BH5	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.2**
BH6	0-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH6 - [LAB_DUP]	0-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
BH7	0-0.2	<25	**130**	**540**	**350**	<0.2	<0.5	<1	<1	<1	0
BH7	0.2-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH8	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH8	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH9	0-0.2	<25	<50	**160**	<100	<0.2	<0.5	<1	<1	<1	0
BH9	0.5-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
TP10	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.2**
TP10 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
TP10	0.3-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
TP11	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.2**
TP11	0.4-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.4**
TP12	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
TP12	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
SDUP1	0-0.2	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP2	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP3 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
Total Number of Samples		32	32	32	32	32	32	32	32	32	24
Maximum Value		<PQL	130	540	350	<PQL	<PQL	<PQL	<PQL	<PQL	2.4

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**

JKEnvironments

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-A: Residential with garden/accessible soils; children's day care centers; preschools; and primary schools

FIELD DATA															LABORATORY DATA											
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample refeference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation %(w/w)	FA and AF Estimation %(w/w)
SAC			**No**					**0.01**			**0.001**			**0.001**											**0.01**	**0.001**
9/05/2023	BH1	0-0.2	No	10	10,750	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH1	0-0.2	594.57	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
9/05/2023	BH2	0-0.2	No	10	10,000	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH2	0-0.2	622.63	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
9/05/2023	BH3	0-0.2	No	10	10,480	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH3	0-0.2	708.16	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
9/05/2023	BH4	0-0.2	No	10	10,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH4	0-0.2	684.4	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
10/05/2023	BH5	0-0.2	No	10	11,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH5	0-0.2	664.72	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
8/05/2023	BH6	0-0.1	No	10	15,000	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH6	0-0.5	679.27	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
8/05/2023	BH6	0.1-0.5	NA	10	11,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8/05/2023	BH7	0-0.2	No	10	10,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH7	0-0.2	548.24	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
8/05/2023	BH7	0.2-0.7	NA	5	6,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8/05/2023	BH7	0.7-1	NA	10	10,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8/05/2023	BH8	0-0.2	No	10	10,660	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH8	0-0.2	654.34	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
10/05/2023	BH9	0-0.2	No	10	10,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	BH9	0-0.2	799.77	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
11/05/2023	TP10	0-0.2	No	10	10,410	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	TP10	0-0.2	409.01	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
11/05/2023	TP10	0.2-0.3	NA	10	10,270	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/05/2023	TP11	0-0.2	No	10	10,710	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	TP11	0-0.2	664.01	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
11/05/2023	TP11	0.4-0.6	NA	10	10,470	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/05/2023	TP12	0-0.2	No	10	11,040	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	323127	TP12	0-0.2	521.44	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
11/05/2023	TP12	0.5-0.7	NA	10	10,500	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Concentration above the SAC **VALUE**

Update textures based on actual descriptions.

JKEnvironments

TABLE S6
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs
All data in mg/kg unless stated otherwise

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																			
							AGED HEAVY METALS-EILs						EILs		ESLs								
				pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05
Ambient Background Concentration (ABC)				-	-	-	NSL	8	18	104	5	77	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH1	0-0.2	F: Silty Clay	Fine	NA	NA	NA	**4**	**18**	**13**	**13**	**9**	**27**	<1	<0.1	<25	<50	**190**	<100	<0.2	<0.5	<1	<1	<0.05
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	**4**	**18**	**12**	**13**	**10**	**26**	<1	<0.1	<25	<50	**330**	<100	<0.2	<0.5	<1	<1	<0.05
BH1	0.3-0.5	Silty Clay	Fine	NA	NA	NA	**4**	**25**	**16**	**16**	**12**	**24**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH1	1.3-1.5	Silty Clay	Fine	NA	NA	NA	**7**	**27**	**21**	**16**	**15**	**40**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH2	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**16**	**12**	**11**	**9**	**21**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH2	1-1.4	Silty Clay	Fine	NA	NA	NA	**7**	**29**	**21**	**17**	**17**	**42**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH3	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**14**	**9**	**11**	**8**	**49**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH3	0.3-0.5	Silty Clay	Fine	NA	NA	NA	<4	**18**	**11**	**8**	**11**	**19**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH4	0-0.2	F: Clayey Silt	Fine	NA	NA	NA	<4	**14**	**11**	**8**	**9**	**37**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH4	0.3-0.5	Silty Clay	Fine	NA	NA	NA	**5**	**25**	**15**	**12**	**17**	**23**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH5	0-0.2	F: Silty Sand	Coarse	NA	NA	NA	**5**	**10**	**9**	**7**	**6**	**26**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH5	0.3-0.5	Silty Clay	Fine	NA	NA	NA	<4	**20**	**12**	**11**	**12**	**22**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH6	0-0.5	Sandy Silty Clay	Fine	NA	NA	NA	**5**	**28**	**20**	**15**	**17**	**36**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	Fine	NA	NA	NA	**5**	**28**	**20**	**16**	**16**	**37**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH7	0-0.2	F: Sandy Silty Clay	Fine	NA	NA	NA	**5**	**11**	**15**	**7**	**11**	**65**	<1	<0.1	<25	**130**	**540**	**350**	<0.2	<0.5	<1	<1	<0.05
BH7	0.2-0.7	Sandy Silty Clay	Fine	NA	NA	NA	**5**	**25**	**22**	**14**	**27**	**46**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH8	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**23**	**15**	**16**	**14**	**31**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH8	0.8-1	Sandy Silty Clay	Fine	NA	NA	NA	**6**	**28**	**29**	**16**	**20**	**66**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH9	0-0.2	F: Sandy Silt	Fine	NA	NA	NA	<4	**18**	**14**	**12**	**11**	**42**	<1	<0.1	<25	<50	**160**	<100	<0.2	<0.5	<1	<1	<0.05
BH9	0.5-0.9	Silty Clay	Fine	NA	NA	NA	**6**	**26**	**28**	**14**	**20**	**71**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP10	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**16**	**10**	**11**	**8**	**24**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	<4	**16**	**10**	**10**	**8**	**23**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP10	0.3-0.6	Silty Clay	Fine	NA	NA	NA	**5**	**23**	**17**	**12**	**14**	**25**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP11	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**18**	**12**	**11**	**9**	**24**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP11	0.4-0.6	Silty Clay	Fine	NA	NA	NA	**7**	**30**	**25**	**16**	**19**	**47**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP12	0-0.2	F: Silty Clay	Fine	NA	NA	NA	<4	**11**	**8**	**7**	**6**	**22**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
TP12	0.5-0.7	F: Silty Clay	Fine	NA	NA	NA	**6**	**31**	**18**	**16**	**18**	**32**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP1	0-0.2	Duplicate of BH1	Fine	NA	NA	NA	**5**	**21**	**14**	**15**	**11**	**31**	<1	<0.1	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<0.05
SDUP2	0-0.2	Duplicate of BH3	Fine	NA	NA	NA	<4	**17**	**11**	**11**	**9**	**56**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP3	0-0.2	Duplicate of BH2	Fine	NA	NA	NA	<4	**18**	**13**	**10**	**10**	**21**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP4	0-0.2	Duplicate of BH4	Fine	NA	NA	NA	<4	**13**	**11**	**7**	**8**	**34**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
Total Number of Samples				0	0	0	31	31	31	31	31	31	32	17	32	32	32	32	32	32	32	32	32
Maximum Value				NA	NA	NA	7	31	29	17	27	71	<PQL	<PQL	<PQL	130	540	350	<PQL	<PQL	<PQL	<PQL	<PQL

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**
The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below

EIL AND ESL ASSESSMENT CRITERIA

Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C_6-C_{10} (F1)	>C_{10}-C_{16} (F2)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH1	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH1	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH1	1.3-1.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH2	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH2	1-1.4	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH3	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH3	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH4	0-0.2	F: Clayey Silt	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH4	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH5	0-0.2	F: Silty Sand	Coarse	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	300	2800	50	85	70	105	20
BH5	0.3-0.5	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH6	0-0.5	Sandy Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH7	0-0.2	F: Sandy Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH7	0.2-0.7	Sandy Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH8	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH8	0.8-1	Sandy Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH9	0-0.2	F: Sandy Silt	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH9	0.5-0.9	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
TP10	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
TP10	0.3-0.6	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
TP11	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
TP11	0.4-0.6	Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
TP12	0-0.2	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
TP12	0.5-0.7	F: Silty Clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
SDUP1	0-0.2	Duplicate of BH1	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
SDUP2	0-0.2	Duplicate of BH3	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
SDUP3	0-0.2	Duplicate of BH2	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	Fine	NA	NA	NA	--	--	--	--	--	--	170	--	180	120	1300	5600	65	105	125	45	20
SDUP4	0-0.2	Duplicate of BH4	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20

TABLE S7
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total	TRH					BTEX COMPOUNDS				
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful	Total Scheduled	PCBs	C_6-C_9	C_{10}-C_{14}	C_{15}-C_{28}	C_{29}-C_{36}	Total C_{10}-C_{36}	Benzene	Toluene	Ethyl benzene	Total Xylenes	ASBESTOS FIBRES
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	50	50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	50	50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	50	50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	50	50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	**Sample Depth**	**Sample Description**																									
BH1	0-0.2	F: Silty Clay	4	<0.4	18	13	13	<0.1	9	27	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	140	<100	140	<0.2	<0.5	<1	<1	Not Detected
BH1 - [LAB_DUP]	0-0.2	Laboratory Duplicate	4	<0.4	18	12	13	<0.1	10	26	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	270	110	380	<0.2	<0.5	<1	<1	NA
BH1	0.3-0.5	Silty Clay	4	<0.4	25	16	16	<0.1	12	24	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH1	1.3-1.5	Silty Clay	7	<0.4	27	21	16	<0.1	15	40	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH2	0-0.2	F: Silty Clay	<4	<0.4	16	12	11	<0.1	9	21	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH2	1-1.4	Silty Clay	7	<0.4	29	21	17	<0.1	17	42	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH3	0-0.2	F: Silty Clay	<4	<0.4	14	9	11	<0.1	8	49	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH3	0.3-0.5	Silty Clay	<4	<0.4	18	11	8	<0.1	11	19	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH4	0-0.2	F: Clayey Silt	<4	<0.4	14	11	8	<0.1	9	37	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH4	0.3-0.5	Silty Clay	5	<0.4	25	15	12	<0.1	17	23	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH5	0-0.2	F: Silty Sand	5	<0.4	10	9	7	<0.1	6	26	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH5	0.3-0.5	Silty Clay	<4	<0.4	20	12	11	<0.1	12	22	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH6	0-0.5	Sandy Silty Clay	5	<0.4	28	20	15	<0.1	17	36	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH6 - [LAB_DUP]	0-0.5	Laboratory Duplicate	5	<0.4	28	20	16	<0.1	16	37	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH7	0-0.2	F: Sandy Silty Clay	5	<0.4	11	15	7	<0.1	11	65	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	85	370	360	815	<0.2	<0.5	<1	<1	Not Detected
BH7	0.2-0.7	Sandy Silty Clay	5	<0.4	25	22	14	<0.1	27	46	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH8	0-0.2	F: Silty Clay	<4	<0.4	23	15	16	<0.1	14	31	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH8	0.8-1	Sandy Silty Clay	6	<0.4	28	29	16	<0.1	20	66	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH9	0-0.2	F: Sandy Silt	<4	<0.4	18	14	12	<0.1	11	42	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	110	110	<0.2	<0.5	<1	<1	Not Detected
BH9	0.5-0.9	Silty Clay	6	<0.4	26	28	14	<0.1	20	71	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP10	0-0.2	F: Silty Clay	<4	<0.4	16	10	11	<0.1	8	24	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP10 - [LAB_DUP]	0-0.2	Laboratory Duplicate	<4	<0.4	16	10	10	<0.1	8	23	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP10	0.3-0.6	Silty Clay	5	<0.4	23	17	12	<0.1	14	25	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP11	0-0.2	F: Silty Clay	<4	<0.4	18	12	11	<0.1	9	24	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP11	0.4-0.6	Silty Clay	7	<0.4	30	25	16	<0.1	19	47	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
TP12	0-0.2	F: Silty Clay	<4	<0.4	11	8	7	<0.1	6	22	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
TP12	0.5-0.7	F: Silty Clay	6	<0.4	31	18	16	<0.1	18	32	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP1	0-0.2	Duplicate of BH1	5	<0.4	21	14	15	<0.1	11	31	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	120	<100	120	<0.2	<0.5	<1	<1	NA
SDUP2	0-0.2	Duplicate of BH3	<4	<0.4	17	11	11	<0.1	9	56	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP3	0-0.2	Duplicate of BH2	<4	<0.4	18	13	10	<0.1	10	21	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP3 - [LAB_DUP]	0-0.2	Laboratory Duplicate	NA	NA	NA	NA	NA	NA	NA	NA	<0.05	<0.05	NA	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP4	0-0.2	Duplicate of BH4	<4	<0.4	13	11	7	<0.1	8	34	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
Total Number of Samples			31	31	31	31	31	31	31	31	32	32	17	18	18	18	17	32	32	32	32	32	32	32	32	32	12
Maximum Value			7	<PQL	31	29	17	<PQL	27	71	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	85	370	360	815	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the CT1	VALUE
Concentration above SCC1	VALUE
Concentration above the SCC2	VALUE
Concentration above PQL	**Bold**

TABLE Q1
SOIL QA/QC SUMMARY

			TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cene	Benzo(g,h,i)perylene
	PQL Envirolab SYD		*25*	*50*	*100*	*100*	*0.2*	*0.5*	*1*	*2*	*1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.05*	*0.1*	*0.1*	*0.1*
	PQL Envirolab VIC		*25*	*50*	*100*	*100*	*0.2*	*0.5*	*1*	*2*	*1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.05*	*0.1*	*0.1*	*0.1*
Intra	BH1	0-0.2	<25	<50	190	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
laboratory	SDUP1	0-0.2	<25	<50	150	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	170	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	24%	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	BH3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
laboratory	SDUP2	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH2	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
laboratory	SDUP3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
laboratory	SDUP4	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field	TB1	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
Blank	8/05/23																									
Field	FRS1 - Shovel	µg/L 1	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
Rinsate	11/05/23																									
Trip	TS1		-	-	-	-	102%	102%	102%	106%	104%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	8/05/23																									

			HCB	alpha- BHC	gamma- BHC	beta- BHC	Heptachlor	delta- BHC	Aldrin	Heptachlor Epoxide	Gamma- Chlordane	alpha- chlordane	Endosulfan I	pp- DDE	Dieldrin	Endrin	pp- DDD	Endosulfan II	pp- DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
	PQL Envirolab SYD		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
	PQL Envirolab VIC		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*
Intra	BH1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	BH3	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP2	0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH2	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP3	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH4	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDUP4	0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field	TB1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Blank	8/05/23																					
Field	FRS1 - Shovel	µg/L 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rinsate	11/05/23																					
Trip	TS1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	8/05/23																					

			Azinphos-methyl (Guthio	Bromophos-ethyl	Chlorpyriphos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel	Total PCBS	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*4*	*0.4*	*1*	*1*	*1*	*0.1*	*1*	*1*
	PQL Envirolab VIC		*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*4*	*0.4*	*1*	*1*	*1*	*0.1*	*1*	*1*
Intra	BH1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	4	<0.4	18	13	13	<0.1	9	27
laboratory	SDUP1	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5	<0.4	21	14	15	<0.1	11	31
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	4.5	nc	19.5	13.5	14	nc	10	29
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	22%	nc	15%	7%	14%	nc	20%	14%
Intra	BH3	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	14	9	11	<0.1	8	49
laboratory	SDUP2	0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	<4	<0.4	17	11	11	<0.1	9	56
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	15.5	10	11	nc	8.5	52.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	19%	20%	0%	nc	12%	13%
Inter	BH2	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	16	12	11	<0.1	9	21
laboratory	SDUP3	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	18	13	10	<0.1	10	21
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	17	12.5	10.5	nc	9.5	21
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	12%	8%	10%	nc	11%	0%
Inter	BH4	0-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	14	11	8	<0.1	9	37
laboratory	SDUP4	0-0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	<4	<0.4	13	11	7	<0.1	8	34
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	13.5	11	7.5	nc	8.5	35.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	7%	0%	13%	nc	12%	8%
Field	TB1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<4	<0.4	3	2	2	<0.1	<1	3
Blank	8/05/23																						
Field	FRS1 - Shovel	µg/L 1	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.01	<0.01	0.5	<0.03	<0.0005	<0.02	0.05
Rinsate	11/05/23																						
Trip	TS1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	8/05/23																						

Result outside of QA/QC acceptance criteria

1. Heavy metals concentrations reported in mg/L

Appendix D: Borehole & Test Pit Logs

DSI Borehole & Test Pit Logs

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH101** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m

Date: 19/9/23 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** O.B./T.H.

Groundwater Record	Field Tests	Depth (m)	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
		0		ASPHALTIC CONCRETE: 100mm.t				
			-	FILL: Silty clay, medium to high plasticity, brown, trace of igneous gravel and asphaltic concrete fragments.	w≈PL			SCREEN: 2.01kg 0.1-0.2m, NO FCF SCREEN: 3.17kg 0.2-0.6m, NO FCF
	N = 24 6,10,14			FILL: Silty clay, medium to high plasticity, red brown, trace of roots.	w≈PL			SCREEN: 6.01kg 0.6-1.0m, NO FCF
	N = 22 6,10,12	1	CI-CH	Silty CLAY: medium to high plasticity, light brown.	w≈PL			ALLUVIAL
ON 20/9/23 ON 26/9/23	N = 15 5,8,7	3		as above, but light brown and grey.				GROUNDWATER MONITORING WELL INSTALLED TO 5.6m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 5.6m TO 3.0m. CASING 3.0m TO 0m. 2mm SAND FILTER PACK 5.6m TO 2.4m. BENTONITE SEAL 2.4m TO 0.1m. COMPLETED WITH A CONCRETED GATIC COVER.
	N = 10 5,5,5		CI-CH	Silty sandy CLAY: medium to high plasticity, grey and orange brown, fine to medium grained sand.	w>PL			
		6		END OF BOREHOLE AT 6.0m				
		7						

SAMPLES: ES, ASS, ASB, SAL, DB

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH102** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 19/9/23 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			ASPHALTIC CONCRETE: 20mm.t				
						FILL: Silty clay, medium to high plasticity, orange brown, trace of igneous gravel and asphalt.	w≈PL			SCREEN: 10.71kg 0.02-0.1m, NO FCF
										SCREEN: 11.01kg 0.1-0.4m, NO FCF
		N = 11 3,5,6			CI-CH	Silty CLAY: medium to high plasticity, brown.	w≈PL			ALLUVIAL
			1			END OF BOREHOLE AT 0.95m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH103** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m
Date: 19/9/23 **Datum:** AHD
Plant Type: JK205 **Logged/Checked by:** O.B./T.H.

Groundwater Record	Field Tests	Depth (m)	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
		0	-	ASPHALTIC CONCRETE: 20mm.t				
				FILL: Silty clay, medium to high plasticity, brown, trace of igneous gravel and asphaltic concrete fragments.	w≈PL			SCREEN: 8.61kg 0.02-0.1m, NO FCF SCREEN: 11.11kg 0.1-0.6m, NO FCF
	N = 15 3,6,9		CI-CH	Silty CLAY: medium to high plasticity, brown.	w≈PL			HYDROCARBON ODOUR ALLUVIAL
		1		as above, but light orange brown.				
	N = 22 5,11,11			Silty CLAY: medium to high plasticity, brown.				
		2						
ON 20/9/23 ON 26/9/23	N = 7 2,4,3	3		as above, but light brown.				
	N = 11 3,7,4	4			w>PL			GROUNDWATER MONITORING WELL INSTALLED TO 5.2m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 5.2m TO 3.0m. CASING 3.0m TO 0m. 2mm SAND FILTER PACK 5.2m TO 1.6m. BENTONITE SEAL 1.6m TO 0.1m. COMPLETED WITH A CONCRETED GATIC COVER.
		5						
		6		END OF BOREHOLE AT 6.0m				
		7						

SAMPLES: ES, ASS, ASB, SAL, DB — Graphic Log

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH104** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m
Date: 19/9/23 **Datum:** AHD
Plant Type: JK205 **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
			0			FILL: Silty clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER
		N = 20 3,8,12			CI-CH	Silty CLAY: medium to high plasticity, brown, trace of roots.	w≈PL			SCREEN: 11.12kg 0-0.1m, NO FCF ALLUVIAL
		N > 15 5,15,0/ 70mm REFUSAL	1–2			as above, but light brown.				
ON 20/9/23 ON 26/9/23		N = 13 5,6,7	3			Silty CLAY: medium to high plasticity, grey and orange brown, trace of fine to medium grained sand, and roots.				
		N = 8 3,4,4	4–5			Silty CLAY: medium to high plasticity, brown mottled grey and orange.	w>PL			GROUNDWATER MONITORING WELL INSTALLED TO 5.2m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 5.2m TO 3.0m. CASING 3.0m TO 0m. 2mm SAND FILTER PACK 5.2m TO 2.0m. BENTONITE SEAL 2.0m TO 0.1m. COMPLETED WITH A CONCRETED GATIC COVER.
			6			END OF BOREHOLE AT 6.0m				
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH105**

1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 19/9/23 **Datum:** AHD

Plant Type: JK205 **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			ASPHALTIC CONCRETE: 50mm.t				
					-	FILL: Silty clay, medium to high plasticity, orange brown, trace of asphaltic concrete fragments.	w≈PL			SCREEN: 3.01kg 0.05-0.3m, NO FCF
		N > 20 8,12,8/ 0mm REFUSAL			CI-CH	Silty CLAY: medium to high plasticity, orange brown.	w≈PL			ALLUVIAL
						END OF BOREHOLE AT 0.8m				
			1							
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP106**

1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty sandy clay, medium to high plasticity, light brown, fine to medium grained sand, trace of roots and root fibres.	w<PL			GRASS COVER SCREEN: 14.12kg 0-0.1m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 15.01kg 0.1-0.6m, NO FCF ALLUVIAL
			1			END OF TEST PIT AT 1.1m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP107** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES: ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, brown, trace of roots and root fibres.	w<PL			GRASS COVER SCREEN: 12.61kg 0-0.1m, NO FCF
										FILL: Silty clay, medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 14.01kg 0.1-0.4m, NO FCF SERVICE CONDUIT ENCOUNTERED AT 0.8m
							1			END OF TEST PIT AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP108** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m
Date: 21/9/23 **Datum:** AHD
Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER
														SCREEN: 12.15kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			ALLUVIAL
							1			END OF TEST PIT AT 0.7m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP109** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.6m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, orange brown, with fine to medium grained sand, trace of ash, slag, roots and root fibres.	w<PL			GRASS COVER SCREEN: 11.45kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			ALLUVIAL
							1			END OF TEST PIT AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP110**

1/1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, brown, trace of concrete fragments, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 12.87kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 13.02kg 0.1-0.3m, NO FCF ALLUVIAL
							1			END OF TEST PIT AT 0.8m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP111**
1/1

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m
Date: 21/9/23 **Datum:** AHD
Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, brown, trace of brick fragments, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 11.11kg 0-0.1m, NO FCF SCREEN: 13.36kg 0.1-0.4m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			ALLUVIAL
			1			END OF TEST PIT AT 0.9m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP112** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.6m
Date: 21/9/23 **Datum:** AHD
Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, brown, trace of plastic fragments, roots and root fibres.	w<PL			GRASS COVER SCREEN: 12.12kg 0-0.1m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 14.01kg 0.1-0.4m, NO FCF ALLUVIAL
			1			END OF BOREHOLE AT 0.9m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP113** 1/1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.5m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES: ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	■		■		■		0			FILL: Silty clay, medium to high plasticity, brown, trace of igneous gravel, ceramic and plastic fragments, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 13.89kg 0-0.1m, NO FCF
	■		■						CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			0.3m: IRRIGATION PIPES ENCOUNTERED ALLUVIAL
							1			END OF TEST PIT AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP114** 1/1

SDUP6: 0-0.2m

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m
Date: 21/9/23 **Datum:** AHD
Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, brown, trace of igneous gravel, fine to medium grained sand, ash, roots and root fibres.	w<PL			GRASS COVER SCREEN: 13.81kg 0-0.1m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w<PL			SCREEN: 14.33kg 0.1-0.5m, NO FCF ALLUVIAL
			1			END OF TEST PIT AT 1.0m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No.
TP115
1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.6m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, brown, trace of igneous gravel, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 12.24kg 0-0.1m, NO FCF SCREEN: 13.95kg 0.1-0.6m, NO FCF
			1		CI-CH	Silty CLAY: medium to high plasticity, light brown, trace of igneous gravel.	w≈PL			ALLUVIAL
			2 3 4 5 6 7			END OF TEST PIT AT 1.3m				

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP116**

1/1

SDUP5: 0-0.2m

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m
Date: 21/9/23 **Datum:** AHD
Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, low to medium plasticity, light brown, with fine to medium grained sand, trace of igneous gravel.	w<PL			GRASS COVER SCREEN: 11.98kg 0-0.1m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w<PL			SCREEN: 12.22kg 0.1-0.5m, NO FCF ALLUVIAL
			1			END OF TEST PIT AT 1.0m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP117** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, brown, trace of igneous gravel, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 13.61kg 0-0.1m, NO FCF SCREEN: 14.01kg 0.1-0.3m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			ALLUVIAL
						END OF TEST PIT AT 0.8m				
			1							
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP118** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, low to medium plasticity, brown, with fine to medium grained sand, trace of roots and root fibres.	w<PL			MULCH COVER SCREEN: 12.85kg 0-0.1m, NO FCF
			1		CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 12.99kg 0.1-0.5m, NO FCF ALLUVIAL
			2 3 4 5 6 7			END OF TEST PIT AT 1.2m				

JKEnvironments

ENVIRONMENTAL LOG

Log No.
TP119
1/1

Environmental logs are not to be used for geotechnical purposes

SDUP4: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, brown, trace of fine to medium grained sand, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 11.01kg 0-0.1m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 12.11kg 0.1-0.35m, NO FCF ALLUVIAL
			1			END OF TEST PIT AT 0.9m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP120** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, brown, with fine to medium grained sand, trace of roots and root fibres.	w≈PL			GRASS COVER SCREEN: 14.01kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, brown.	w≈PL			ALLUVIAL
										END OF TEST PIT AT 0.8m				
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No.
TP121
1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES: ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, low to medium plasticity, brown, trace of roots and root fibres.	w<PL			GRASS COVER SCREEN: 12.45kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w<PL			SCREEN: 12.98kg 0.1-0.4m, NO FCF ALLUVIAL
							1			END OF TEST PIT AT 0.9m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. BH122 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m
Date: 19/9/23 **Datum:** AHD
Plant Type: JK205 **Logged/Checked by:** O.B./T.H.

Groundwater Record	Samples (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0		-	GRAVEL: medium to coarse grained, sub-angular, igneous, grey.	w≈PL			SCREEN: 2.45kg 0.05-0.25m, NO FCF
		N = 14 3,6,8			CI-CH	FILL: Silty clay, medium to high plasticity, red brown, trace of igneous gravel.	w≈PL			
						Silty CLAY: medium to high plasticity, brown.				ALLUVIAL
			1			END OF BOREHOLE AT 0.95m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No.
TP123
1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8

Date: 22/9/23 **Datum:** -

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clayey sand, fine to medium grained, light brown, trace of roots and root fibres.	M			GRASS COVER
									CI-CH	Silty sandy CLAY: medium to high plasticity, brown, fine to medium grained sand.	w≈PL			SCREEN: 14.81kg 0-0.1m, NO FCF 0.1m: IRRIGATION PIPE ALLUVIAL
										END OF TEST PIT AT 0.8m				

Depth scale: 1, 2, 3, 4, 5, 6, 7

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP124** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, brown, with fine to medium grained sand, trace of roots and root fibres.	w≈PL			GRASS COVER SCREEN: 15.01kg 0-0.1m, NO FCF SCREEN: 14.95kg 0.1-0.3m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			ALLUVIAL
										END OF TEST PIT AT 0.8m				
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP125**

1/1

SDUP3: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, light brown, trace of bark mulch, roots and root fibres.	w≈PL			MULCH COVER SCREEN: 10.91kg 0-0.1m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			SCREEN: 13.10kg 0.1-0.4m, NO FCF ALLUVIAL
			1			END OF TEST PIT AT 0.9m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP126** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m
Date: 22/9/23 **Datum:** AHD
Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	Samples (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, brown, trace of plastic fragments, roots and root fibres.	w<PL			GRASS COVER SCREEN: 11.90kg 0-0.1m, NO FCF SCREEN: 12.15kg 0.1-0.3m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			ALLUVIAL
			1			END OF TEST PIT AT 0.8m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP127** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER SCREEN: 11.01kg 0-0.1m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 12.23kg 0.1-0.3m, NO FCF ALLUVIAL
			1			END OF TEST PIT AT 0.8m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP128** 1/1

SDUP1: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 109.0m

Date: 21/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, red brown, trace of roots and root fibres.	w≈PL			GRASS COVER SCREEN: 12.48kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, brown.	w≈PL			SCREEN: 13.10kg 0.1-0.4m, NO FCF ALLUVIAL
							1							
										END OF TEST PIT AT 1.1m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **TP129**

1/1

SDUP2: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER SCREEN: 12.05kg 0-0.1m, NO FCF
					CI-CH	Silty CLAY: medium to high plasticity, brown.	w≈PL			SCREEN: 13.01kg 0.1-0.5m, NO FCF ALLUVIAL
			1			END OF TEST PIT AT 1.0m				
			2							
			3							
			4							
			5							
			6							
			7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP130** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** -

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES: ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, brown, trace of igneous gravel, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 14.81kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown.	w≈PL			ALLUVIAL
										END OF TEST PIT AT 0.7m				
							1							
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP131** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED HOSPITAL REDEVELOPMENT
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m
Date: 22/9/23 **Datum:** AHD
Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			SCREEN: 13.81kg 0-0.1m, NO FCF SCREEN: 14.01kg 0.1-0.3m, NO FCF ALLUVIAL
							1			END OF TEST PIT AT 0.8m				
							2							
							3							
							4							
							5							
							6							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP132** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED HOSPITAL REDEVELOPMENT

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 22/9/23 **Datum:** AHD

Plant Type: EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES: ES	ASS	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION							0			FILL: Silty clay, medium to high plasticity, brown, trace of roots and root fibres.	w≈PL			GRASS COVER SCREEN: 14.50kg 0-0.1m, NO FCF
									CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of root fibres.	w≈PL			ALLUVIAL
										END OF TEST PIT AT 0.7m				
							1							
							2							
							3							
							4							
							5							
							6							
							7							

ENVIRONMENTAL LOGS EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 *'Geotechnical Site Investigations'*. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)
Very Soft (VS)	≤ 25	≤ 12
Soft (S)	> 25 and ≤ 50	> 12 and ≤ 25
Firm (F)	> 50 and ≤ 100	> 25 and ≤ 50
Stiff (St)	> 100 and ≤ 200	> 50 and ≤ 100
Very Stiff (VSt)	> 200 and ≤ 400	> 100 and ≤ 200
Hard (Hd)	> 400	> 200
Friable (Fr)	Strength not attainable – soil crumbles	

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289.6.3.1–2004 (R2016) *'Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)'*.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

  N > 30
  15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

The borehole or test pit logs presented herein are an interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment, but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.

SYMBOL LEGENDS

SOIL	ROCK
FILL	CONGLOMERATE
TOPSOIL	SANDSTONE
CLAY (CL, CI, CH)	SHALE/MUDSTONE
SILT (ML, MH)	SILTSTONE
SAND (SP, SW)	CLAYSTONE
GRAVEL (GP, GW)	COAL
SANDY CLAY (CL, CI, CH)	LAMINITE
SILTY CLAY (CL, CI, CH)	LIMESTONE
CLAYEY SAND (SC)	PHYLLITE, SCHIST
SILTY SAND (SM)	TUFF
GRAVELLY CLAY (CL, CI, CH)	GRANITE, GABBRO
CLAYEY GRAVEL (GC)	DOLERITE, DIORITE
SANDY SILT (ML, MH)	BASALT, ANDESITE
PEAT AND HIGHLY ORGANIC SOILS (Pt)	QUARTZITE

OTHER MATERIALS

BRICKS OR PAVERS

CONCRETE

ASPHALTIC CONCRETE

CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol	Typical Names	Field Classification of Sand and Gravel	Laboratory Classification	
Coarse grained soil (more than 65% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 4$ $1 < C_c < 3$
		GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half of coarse fraction is smaller than 2.36mm)	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 6$ $1 < C_c < 3$
		SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	N/A
		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	% < 0.075mm
ine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity $Cu > 4$ and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

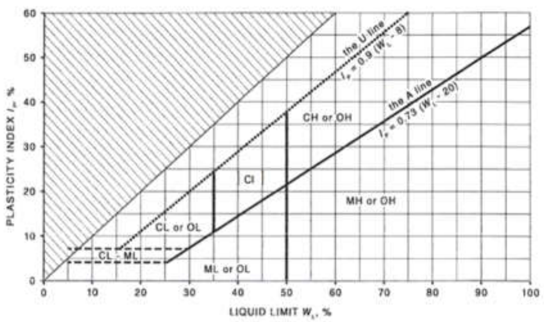
$$C_U = \frac{D_{60}}{D_{10}} \quad \text{and} \quad C_C = \frac{(D_{30})^2}{D_{10}\, D_{60}}$$

Where D_{10}, D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.
2 Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.
3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.
4 The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Modified Casagrande Chart for Classifying Silts and Clays according to their Behaviour



LOG SYMBOLS

Log Column	Symbol	Definition
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown.
	C	Extent of borehole/test pit collapse shortly after drilling/excavation.
		Groundwater seepage into borehole or test pit noted during drilling or excavation.
Samples	ES	Sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos analysis.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
	PFAS	Soil sample taken over depth indicated, for analysis of Per- and Polyfluoroalkyl Substances.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25	Vane shear reading in kPa of undrained shear strength.
	PID = 100	Photoionisation detector reading in ppm (soil sample headspace test).
Moisture Condition (Fine Grained Soils)	*w* > PL	Moisture content estimated to be greater than plastic limit.
	w ≈ PL	Moisture content estimated to be approximately equal to plastic limit.
	w < PL	Moisture content estimated to be less than plastic limit.
	w ≈ LL	Moisture content estimated to be near liquid limit.
	w > LL	Moisture content estimated to be wet of liquid limit.
(Coarse Grained Soils)	D	DRY – runs freely through fingers.
	M	MOIST – does not run freely but no free water visible on soil surface.
	W	WET – free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS	VERY SOFT – unconfined compressive strength ≤ 25kPa.
	S	SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa.
	F	FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa.
	St	STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa.
	VSt	VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa.
	Hd	HARD – unconfined compressive strength > 400kPa.
	Fr	FRIABLE – strength not attainable, soil crumbles.
	( )	Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.

Log Column	Symbol	Definition	Density Index (I_D) Range (%)	SPT 'N' Value Range (Blows/300mm)
Density Index/ Relative Density (Cohesionless Soils)	VL	VERY LOOSE	≤ 15	0 – 4
	L	LOOSE	> 15 and ≤ 35	4 – 10
	MD	MEDIUM DENSE	> 35 and ≤ 65	10 – 30
	D	DENSE	> 65 and ≤ 85	30 – 50
	VD	VERY DENSE	> 85	> 50
	( )	Bracketed symbol indicates estimated density based on ease of drilling or other assessment.		

Log Column	Symbol	Definition
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Twin pronged tungsten carbide bit.
	T_{60}	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.
	Soil Origin	The geological origin of the soil can generally be described as: RESIDUAL – soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock. EXTREMELY WEATHERED – soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock. ALLUVIAL – soil deposited by creeks and rivers. ESTUARINE – soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents. MARINE – soil deposited in a marine environment. AEOLIAN – soil carried and deposited by wind. COLLUVIAL – soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits. LITTORAL – beach deposited soil.

Classification of Material Weathering

Term		Abbreviation		Definition
Residual Soil		RS		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely Weathered		XW		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly Weathered	Distinctly Weathered (Note 1)	HW	DW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately Weathered		MW		The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly Weathered		SW		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh		FR		Rock shows no sign of decomposition of individual minerals or colour changes.

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: *'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'*. There is some change in rock strength.

Rock Material Strength Classification

			Guide to Strength	
Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Point Load Strength Index $I_{s(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

PSI Borehole & Test Pit Logs

JKGeotechnics

BOREHOLE LOG

Borehole No.
1
1/1
SDUP1: 0-0.2m

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED ALTERATIONS AND ADDITIONS
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.7m
Date: 9/5/23 **Datum:** AHD
Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	Field Tests	Depth (m)	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION		0		FILL: Silty clay, low to medium plasticity, brown, trace of fine grained igneous gravel, and root fibres.	w<PL			GRASS COVER
	N > 20 8,11,9/ 50mm REFUSAL		CI-CH	Silty CLAY: medium to high plasticity, brown and red brown, trace of fine grained sand, and root fibres.	w<PL	Hd	>600 >600 >600 >600	SCREEN: 10.75kg 0-0.2m, NO FCF ALLUVIAL
	N = 26 5,12,14	1 – 2		Silty CLAY: medium to high plasticity, brown, trace of fine grained sand, and fine to medium grained igneous gravel.			>600 >600 >600	
		3		Silty CLAY: medium to high plasticity, light grey mottled orange brown, trace of fine grained sand, and fine to medium grained igneous gravel.			450 500 550	HP TESTING ON REMOULDED SAMPLE
2 DAYS AFTER COMPLETION	N = 22 8,8,14	4		as above, but grey and brown.			>600 >600 >600 >600	GROUNDWATER MONITORING WELL INSTALLED TO 4.9m.
		5		END OF BOREHOLE AT 5.0m				CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 4.9m TO 2.5m. CASING 2.5m TO 0.12m. 2mm SAND FILTER PACK 4.9m TO 2.5m. BENTONITE SEAL 2.5m TO 2.0m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
		6						
		7						

Samples: ES, U50, DB, DS; Graphic Log

JKGeotechnics

BOREHOLE LOG

Borehole No. **2**

1/1

SDUP3: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 9/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	Field Tests	Depth (m)	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
		0		FILL: Silty clay, medium to high plasticity, red brown, trace of fine grained igneous gravel and root fibres.	w>PL			GRASS COVER SCREEN: 10.0kg 0-0.2m, NO FCF
	N = 27 5,12,15		CH	Silty CLAY: high plasticity, brown, trace of fine to medium grained igneous gravel, fine grained ironstone gravel, and root fibres.	w<PL	Hd	>600 >600 >600	ALLUVIAL
	N = 14 3,6,8	1					480 530 550	
		2		Silty CLAY: medium to high plasticity, brown, trace of fine to medium grained igneous gravel and root fibres.	w<PL	(F)		
	N = 6 2,3,3	3	CL-CI	Silty CLAY: low to medium plasticity, light grey mottled orange brown and red brown, trace of sand.	w>PL	St	120 170 180	
▶		4		Sandy silty CLAY: low to medium plasticity, light grey mottled orange brown, fine grained sand, trace of shell and muscovite fragments.		S-F	40 30 50	HP TESTING ON REMOULDED SAMPLE
▼ ON COMPLETION		5		END OF BOREHOLE AT 4.95m				
		6						
		7						

Samples: ES, U50, DB, DS

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BOREHOLE LOG

Borehole No. 3

1/1

SDUP2: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 9/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	Field Tests	Depth (m)	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
		0		FILL: Silty clay, low to medium plasticity, brown, trace of fine to medium grained sand, fine grained igneous gravel, and root fibres.	w>PL			GRASS COVER
	N = 10 3,3,7		CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of fine grained igneous gravel, and root fibres.	w>PL	VSt	250 320 350	SCREEN: 10.48kg 0-0.2m, NO FCF ALLUVIAL
	N = 10 3,4,6	1–2		Silty CLAY: medium to high plasticity, brown mottled red brown, trace of fine to medium grained igneous gravel, ash and root fibres.	w≈PL	Hd	430 500 550	
2 DAYS AFTER COMPLETION		2–3	CL-CI	Silty CLAY: low to medium plasticity, brown and orange brown, trace of fine grained sand.	w>PL	F	40 40 50	HP TESTING ON REMOULDED SAMPLE
ON COMPLETION	N = 9 0,4,5	4–5					60 80 110	GROUNDWATER MONITORING WELL INSTALLED TO 4.88m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 4.88m TO 2.58m. CASIN
		6–7		END OF BOREHOLE AT 5.45m				2.58m TO 0.12m. 2mm SAND FILTER PACK 4.88m TO 2.2m. BENTONITE SEAL 2.2m TO 1.8m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.

SAMPLES: ES, U50, DB, DS

Graphic Log

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BOREHOLE LOG

Borehole No. 4

1/1

SDUP4: 0-0.2m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 9/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	Field Tests	Depth (m)	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
		0		FILL: Clayey Silt, low plasticity, red brown, with fine grained sand, trace of root fibres.	w<PL			GRASS COVER
	N = 18 3,9,9		CI-CH	Silty CLAY: medium to high plasticity, red brown, trace of fine to medium grained igneous gravel.	w<PL	Hd		SCREEN: 10.12kg 0-0.2m, NO FCF ALLUVIAL
	N = 9 3,4,5			Silty CLAY: medium to high plasticity, brown mottled light grey and orange brown, trace of fine grained igneous and ironstone gravel, and root fibres.			450 350 120	
		2	CL-CI	Silty CLAY: low to medium plasticity, light grey mottled orange brown, with fine to medium grained sand.	w>PL	VSt (S-F)	250 230 200	HP TESTING ON REMOULDED SAMPLE
ON COMPLETION	N = 2 2,2,0		CL	Sandy CLAY: low plasticity, brown, fine to coarse grained sand, trace of shell fragments.	w>PL	F	80 110 90	
	N = 13 3,5,8		SM	Silty SAND: fine to coarse grained, brown, trace of shell fragments.	W	MD		
		5		END OF BOREHOLE AT 4.95m				

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BOREHOLE LOG

Borehole No. **5**

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.8m

Date: 10/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	Field Tests	Depth (m)	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
		0		FILL: Silty sand, fine to coarse grained, brown, trace of fine grained sandstone gravel, and clay.	M			GRASS COVER SCREEN: 11.45kg 0-0.2m, NO FCF
	N = 9 2,3,6		CI-CH	Silty CLAY: medium to high plasticity, red brown and brown, trace of fine to medium grained sand fine to medium grained igneous gravel, ash and root fibres.	w≈PL	VSt	320 350 350	ALLUVIAL
	N = 11 3,4,7	1	CI	Silty CLAY: medium plasticity, light grey, trace of ash and root fibres.	w>PL		230 320 380 420 450 480	HP TESTING ON REMOULDED SAMPLE
		2						
		3	SC	Clayey SAND: fine to coarse grained, brown, fine to medium plasticity clay.	M W	L		
ON COMPLETION	N = 8 3,4,4	4	CI-CH	Silty CLAY: medium to high plasticity, light grey mottled orange brown, trace of root fibres.	w>PL	St- VSt	120 250 310	
	N = 11 4,6,5		SC	Clayey SAND: fine to coarse grained, brown, trace of fine to medium grained igneous gravel.	W	MD		
		5		END OF BOREHOLE AT 5.0m				
		6						
		7						

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BOREHOLE LOG

Borehole No.
6
1/1

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED ALTERATIONS AND ADDITIONS
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m
Date: 8/5/23 **Datum:** AHD
Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	U50	DB	DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION						0		CL-CI	Sandy silty CLAY: low to medium plasticity, red brown, fine to medium grained sand, with fine to medium grained igneous gravel, and root fibres.	w<PL	(Hd)		GRASS COVER SCREEN: 15.0kg 0-0.1m, NO FCF SCREEN: 11.45kg 0.1-0.5m, NO FCF
						1							SCREEN: 6.75kg 1.0-1.5m, NO FCF
									END OF BOREHOLE AT 1.5m				
						2							
						3							
						4							
						5							
						6							
						7							

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BOREHOLE LOG

Borehole No. 7

1/1

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.9m

Date: 8/5/23 **Datum:** AHD

Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES (ES, U50, DB, DS)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Sandy silty clay, low to medium plasticity, brown, fine to medium grained sand, with fine to medium grained igneous, claystone and sandstone gravel.	w<PL			GRASS COVER
					CL-CI	Sandy silty CLAY: low to medium plasticity, red brown, fine to medium grained sand, trace of fine grained igneous gravel.	w<PL	Hd	>600 >600 >600	SCREEN: 10.4kg 0-0.2m, NO FCF SCREEN: 6.01kg 0.2-0.7m, NO FCF SCREEN: 10.11kg 0.7-1.0m, NO FCF HP TESTING ON REMOULDED SAMPLE
			1			as above, but brown.				
						END OF BOREHOLE AT 1.5m				
			2							
			3							
			4							
			5							
			6							
			7							

JKGeotechnics

BOREHOLE LOG

Borehole No.
8
1/1

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED ALTERATIONS AND ADDITIONS
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m
Date: 8/5/23 **Datum:** AHD
Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	U50	DB	DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION						0			FILL: Silty clay, medium to high plasticity, brown, trace of fine to medium grained sand, fine to medium grained igneous gravel, and root fibres.	w>PL			GRASS COVER POSSIBLY NATURAL SCREEN: 10.66kg 0-0.2m, NO FCF
						1		SC	Sandy silty CLAY: low to medium plasticity, brown, fine to medium grained sand trace of fine grained igneous gravel.	w≈PL	(St)		ALLUVIAL
						2			END OF BOREHOLE AT 2.0m				
						3							
						4							
						5							
						6							
						7							

JKGeotechnics

BOREHOLE LOG

Borehole No.
9

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED ALTERATIONS AND ADDITIONS
Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: 35821BF **Method:** SPIRAL AUGER **R.L. Surface:** ≈ 108.6m
Date: 10/5/23 **Datum:** AHD
Plant Type: HANJIN DB8 **Logged/Checked by:** C.S.Y./O.F.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION						0			FILL: Sandy silt, low plasticity, red brown, fine to medium grained sand, trace of fine grained sand, clay nodules and root fibres.	w<PL			GRASS COVER SCREEN: 10.01kg 0-0.2m, NO FCF
						1		CL-CI	Silty CLAY: low to medium plasticity, brown, trace of fine grained sand, and clay nodules.	w<PL	(VSt)		ALLUVIAL
						2 3 4 5 6 7			END OF BOREHOLE AT 1.5m				

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP10** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.8m

Date: 11/5/23 **Datum:** AHD

Plant Type: 5T EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION			0			FILL: Silty clay, low to medium plasticity, brown, trace of root fibres.	w<PL			SCREEN: 10.41kg 0-0.2m, NO FCF
						FILL: Silty clay, low to medium plasticity, red brown, trace of ash and root fibres.				SCREEN: 10.27kg 0.2-0.3m, NO FCF
			0.5		CI-CH	Silty CLAY: medium to high plasticity, red brown.	w<PL			ALLUVIAL
			1							
						END OF TEST PIT AT 1.1m				
			1.5							
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP11** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 108.7m

Date: 11/5/23 **Datum:** AHD

Plant Type: 5T EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	SAMPLES (ES, ASS, ASB, SAL, DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	ES, ASB, DB		0			FILL: Silty clay, low to medium plasticity, brown, trace of root fibres.	w<PL			SCREEN: 10.71kg 0-0.2m, NO FCF
	ES, ASB, DB		0.5		CI-CH	Silty CLAY: medium to high plasticity, brown and red brown.	w<PL			ALLUVIAL SCREEN: 10.47kg 0.4-0.6m, NO FCF
	ES, ASB		1							
			1.5			END OF TEST PIT AT 1.3m				
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **TP12** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Job No.: E35821PR **Method:** TEST PIT **R.L. Surface:** ≈ 109.0m

Date: 11/5/23 **Datum:** AHD

Plant Type: 5T EXCAVATOR **Logged/Checked by:** O.B./T.H.

Groundwater Record	Samples (ES / ASS / ASB / SAL / DB)	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION	ES, ASB, DB (0-0.2m)		0			FILL: Silty clay, low to medium plasticity, brown, trace of root fibres.	w≈PL			SCREEN: 11.04kg 0-0.2m, NO FCF
	ES, ASB, DB (0.5-0.7m)		0.5			FILL: Silty clay, low to medium plasticity, red brown, trace of ash and root fibres.				SCREEN: 10.50kg 0.5-0.7m, NO FCF
	ES, ASB (1.1-1.3m)		0.7 – 1		CI-CH	Silty CLAY: medium to high plasticity, red brown.	w<PL			ALLUVIAL
			1.3			END OF TEST PIT AT 1.3m				

ENVIRONMENTAL LOGS EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 *'Geotechnical Site Investigations'*. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)
Very Soft (VS)	≤ 25	≤ 12
Soft (S)	> 25 and ≤ 50	> 12 and ≤ 25
Firm (F)	> 50 and ≤ 100	> 25 and ≤ 50
Stiff (St)	> 100 and ≤ 200	> 50 and ≤ 100
Very Stiff (VSt)	> 200 and ≤ 400	> 100 and ≤ 200
Hard (Hd)	> 400	> 200
Friable (Fr)	Strength not attainable – soil crumbles	

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289.6.3.1–2004 (R2016) *'Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)'*.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

  N > 30
  15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

The borehole or test pit logs presented herein are an interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment, but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.

SYMBOL LEGENDS

SOIL

- FILL
- TOPSOIL
- CLAY (CL, CI, CH)
- SILT (ML, MH)
- SAND (SP, SW)
- GRAVEL (GP, GW)
- SANDY CLAY (CL, CI, CH)
- SILTY CLAY (CL, CI, CH)
- CLAYEY SAND (SC)
- SILTY SAND (SM)
- GRAVELLY CLAY (CL, CI, CH)
- CLAYEY GRAVEL (GC)
- SANDY SILT (ML, MH)
- PEAT AND HIGHLY ORGANIC SOILS (Pt)

ROCK

- CONGLOMERATE
- SANDSTONE
- SHALE/MUDSTONE
- SILTSTONE
- CLAYSTONE
- COAL
- LAMINITE
- LIMESTONE
- PHYLLITE, SCHIST
- TUFF
- GRANITE, GABBRO
- DOLERITE, DIORITE
- BASALT, ANDESITE
- QUARTZITE

OTHER MATERIALS

- BRICKS OR PAVERS
- CONCRETE
- ASPHALTIC CONCRETE

CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol	Typical Names	Field Classification of Sand and Gravel	Laboratory Classification	
Coarse grained soil (more than 65% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 4$ $1 < C_c < 3$
		GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half of coarse fraction is smaller than 2.36mm)	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 6$ $1 < C_c < 3$
		SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	N/A
		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	% < 0.075mm
ine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity $Cu > 4$ and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_U = \frac{D_{60}}{D_{10}} \quad and \quad C_C = \frac{(D_{30})^2}{D_{10}\,D_{60}}$$

Where D_{10}, D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

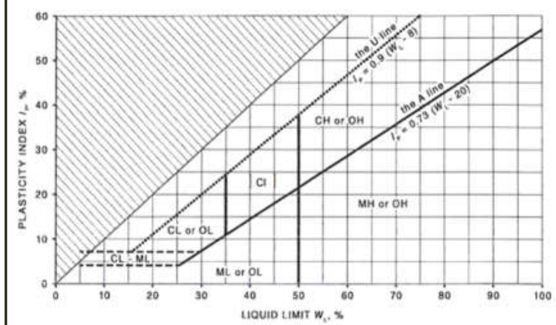
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

2 Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.

3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.

4 The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Modified Casagrande Chart for Classifying Silts and Clays according to their Behaviour



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LOG SYMBOLS

Log Column	Symbol	Definition
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown.
	C	Extent of borehole/test pit collapse shortly after drilling/excavation.
		Groundwater seepage into borehole or test pit noted during drilling or excavation.
Samples	ES	Sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos analysis.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
	PFAS	Soil sample taken over depth indicated, for analysis of Per- and Polyfluoroalkyl Substances.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25	Vane shear reading in kPa of undrained shear strength.
	PID = 100	Photoionisation detector reading in ppm (soil sample headspace test).
Moisture Condition (Fine Grained Soils)	w > PL	Moisture content estimated to be greater than plastic limit.
	w ≈ PL	Moisture content estimated to be approximately equal to plastic limit.
	w < PL	Moisture content estimated to be less than plastic limit.
	w ≈ LL	Moisture content estimated to be near liquid limit.
	w > LL	Moisture content estimated to be wet of liquid limit.
(Coarse Grained Soils)	D	DRY – runs freely through fingers.
	M	MOIST – does not run freely but no free water visible on soil surface.
	W	WET – free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS	VERY SOFT – unconfined compressive strength ≤ 25kPa.
	S	SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa.
	F	FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa.
	St	STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa.
	VSt	VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa.
	Hd	HARD – unconfined compressive strength > 400kPa.
	Fr	FRIABLE – strength not attainable, soil crumbles.
	( )	Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.

Log Column	Symbol	Definition	Density Index (I_D) Range (%)	SPT 'N' Value Range (Blows/300mm)
Density Index/ Relative Density (Cohesionless Soils)	VL	VERY LOOSE	≤ 15	0 – 4
	L	LOOSE	> 15 and ≤ 35	4 – 10
	MD	MEDIUM DENSE	> 35 and ≤ 65	10 – 30
	D	DENSE	> 65 and ≤ 85	30 – 50
	VD	VERY DENSE	> 85	> 50
	( )	Bracketed symbol indicates estimated density based on ease of drilling or other assessment.		

Log Column	Symbol	Definition
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Twin pronged tungsten carbide bit.
	T_{60}	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.
	Soil Origin	The geological origin of the soil can generally be described as: RESIDUAL – soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock. EXTREMELY WEATHERED – soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock. ALLUVIAL – soil deposited by creeks and rivers. ESTUARINE – soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents. MARINE – soil deposited in a marine environment. AEOLIAN – soil carried and deposited by wind. COLLUVIAL – soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits. LITTORAL – beach deposited soil.

Classification of Material Weathering

Term		Abbreviation		Definition
Residual Soil		RS		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely Weathered		XW		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly Weathered	Distinctly Weathered (Note 1)	HW	DW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately Weathered		MW		The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly Weathered		SW		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh		FR		Rock shows no sign of decomposition of individual minerals or colour changes.

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: *'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'*. There is some change in rock strength.

Rock Material Strength Classification

			Guide to Strength	
Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Point Load Strength Index $I_{s(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Appendix E: Laboratory Reports & COC Documents

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CERTIFICATE OF ANALYSIS 334243

Client Details

Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E35821PR Finley**
Number of Samples	82 Soil, 1 Water
Date samples received	28/09/2023
Date completed instructions received	28/09/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	06/10/2023
Date of Issue	06/10/2023

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Analysed by Asbestos Approved Analyst: Nyovan Moonean
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
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Hannah Nguyen, Metals Supervisor
Liam Timmins, Organics Supervisor
Loren Bardwell, Development Chemist
Lucy Zhu, Asbestos Supervisor
Steven Luong, Senior Chemist
Tim Toll, Chemist (FAS)

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-1	334243-2	334243-6	334243-8	334243-9
Your Reference	UNITS	BH101	BH101	BH102	BH103	BH103
Depth		0.1-0.3	0.6-0.95	0.02-0.2	0.02-0.2	0.6-0.95
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	80	73	82	79	68

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-14	334243-15	334243-18	334243-20	334243-22
Your Reference	UNITS	BH104	BH104	BH104	BH105	TP106
Depth		0-0.2	0.6-0.95	4.6-4.95	0.05-0.2	0-0.2
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	74	73	72	81	81

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-24	334243-25	334243-26	334243-28	334243-29
Your Reference	UNITS	TP107	TP107	TP108	TP109	TP109
Depth		0-0.2	0.7-0.9	0-0..2	0-0.2	0.7-0.9
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	74	105	113	118	113

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-30	334243-31	334243-32	334243-34	334243-36
Your Reference	UNITS	TP110	TP110	TP111	TP112	TP113
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	102	103	108	103	101

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-38	334243-39	334243-40	334243-41	334243-42
Your Reference	UNITS	TP114	TP114	TP115	TP115	TP116
Depth		0-0.2	0.8-1	0-0.2	1.1-1.3	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	06/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	100	105	94	108	111

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-44	334243-46	334243-47	334243-48	334243-49
Your Reference	UNITS	TP117	TP118	TP118	TP119	TP119
Depth		0-0.2	0-0.2	1-1.2	0-0.2	0.7-0.9
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	108	111	111	108	112

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-50	334243-51	334243-52	334243-54	334243-56
Your Reference	UNITS	TP120	TP120	TP121	BH122	TP123
Depth		0-0.2	0.6-0.2	0-0.2	0.05-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	19/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	109	106	108	103	112

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-57	334243-58	334243-60	334243-61	334243-62
Your Reference	UNITS	TP123	TP124	TP125	TP125	TP126
Depth		0.6-0.8	0-0.2	0-0.2	0.7-09	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	105	101	108	110	109

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-64	334243-65	334243-66	334243-68	334243-70
Your Reference	UNITS	TP127	TP127	TP128	TP129	TP130
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	109	106	107	111	105

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-71	334243-72	334243-74	334243-76	334243-77
Your Reference	UNITS	TP130	TP131	TP132	SDUP1	SDUP2
Depth		0.5-0.7	0-0.2	0-0.2	-	-
Date Sampled		22/09/2023	22/09/2023	22/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	101	104	110	107	107

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		334243-78	334243-79	334243-80	334243-82	334243-83
Your Reference	UNITS	SDUP3	TS-S1	TB-S1	TS-S2	TB-S2
Depth		-	-	-	-	-
Date Sampled		21/09/2023	18/09/2023	18/09/2023	25/09/2023	25/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
TRH C_6 - C_9	mg/kg	<25	[NA]	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	[NA]	<25	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NA]	<25	[NA]	<25
Benzene	mg/kg	<0.2	98%	<0.2	100%	<0.2
Toluene	mg/kg	<0.5	99%	<0.5	101%	<0.5
Ethylbenzene	mg/kg	<1	98%	<1	102%	<1
m+p-xylene	mg/kg	<2	97%	<2	102%	<2
o-Xylene	mg/kg	<1	96%	<1	102%	<1
Naphthalene	mg/kg	<1	[NA]	<1	[NA]	<1
Total +ve Xylenes	mg/kg	<1	[NA]	<1	[NA]	<1
Surrogate aaa-Trifluorotoluene	%	109	98	115	104	114

svTRH (C10-C40) in Soil						
Our Reference		334243-1	334243-2	334243-6	334243-8	334243-9
Your Reference	UNITS	BH101	BH101	BH102	BH103	BH103
Depth		0.1-0.3	0.6-0.95	0.02-0.2	0.02-0.2	0.6-0.95
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	04/10/2023	03/10/2023	03/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	120	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	240	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	350	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	250	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	290	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	540	<50	<50
Surrogate o-Terphenyl	%	94	96	91	95	97

svTRH (C10-C40) in Soil						
Our Reference		334243-14	334243-15	334243-18	334243-20	334243-22
Your Reference	UNITS	BH104	BH104	BH104	BH105	TP106
Depth		0-0.2	0.6-0.95	4.6-4.95	0.05-0.2	0-0.2
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	04/10/2023	03/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	92	95	92	97	87

svTRH (C10-C40) in Soil						
Our Reference		334243-24	334243-25	334243-26	334243-28	334243-29
Your Reference	UNITS	TP107	TP107	TP108	TP109	TP109
Depth		0-0.2	0.7-0.9	0-0..2	0-0.2	0.7-0.9
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	92	92	92	92	90

svTRH (C10-C40) in Soil						
Our Reference		334243-30	334243-31	334243-32	334243-34	334243-36
Your Reference	UNITS	TP110	TP110	TP111	TP112	TP113
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	91	92	93	91	91

svTRH (C10-C40) in Soil						
Our Reference		334243-38	334243-39	334243-40	334243-41	334243-42
Your Reference	UNITS	TP114	TP114	TP115	TP115	TP116
Depth		0-0.2	0.8-1	0-0.2	1.1-1.3	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	150	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	280	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	430	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	330	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	260	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	590	<50
Surrogate o-Terphenyl	%	95	92	91	94	94

svTRH (C10-C40) in Soil						
Our Reference		334243-44	334243-46	334243-47	334243-48	334243-49
Your Reference	UNITS	TP117	TP118	TP118	TP119	TP119
Depth		0-0.2	0-0.2	1-1.2	0-0.2	0.7-0.9
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	77	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	520	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	390	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	990	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	210	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	210	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	630	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	230	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	1,100	<50	<50	<50
Surrogate o-Terphenyl	%	90	114	92	91	92

svTRH (C10-C40) in Soil						
Our Reference		334243-50	334243-51	334243-52	334243-54	334243-56
Your Reference	UNITS	TP120	TP120	TP121	BH122	TP123
Depth		0-0.2	0.6-0.2	0-0.2	0.05-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	19/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	92	92	94	94	96

svTRH (C10-C40) in Soil						
Our Reference		334243-57	334243-58	334243-60	334243-61	334243-62
Your Reference	UNITS	TP123	TP124	TP125	TP125	TP126
Depth		0.6-0.8	0-0.2	0-0.2	0.7-09	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	97	95	95	99	95

svTRH (C10-C40) in Soil						
Our Reference		334243-64	334243-65	334243-66	334243-68	334243-70
Your Reference	UNITS	TP127	TP127	TP128	TP129	TP130
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	150	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	150	<50
Surrogate o-Terphenyl	%	94	96	97	93	94

svTRH (C10-C40) in Soil						
Our Reference		334243-71	334243-72	334243-74	334243-76	334243-77
Your Reference	UNITS	TP130	TP131	TP132	SDUP1	SDUP2
Depth		0.5-0.7	0-0.2	0-0.2	-	-
Date Sampled		22/09/2023	22/09/2023	22/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	150
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	150
Surrogate o-Terphenyl	%	93	90	92	91	92

svTRH (C10-C40) in Soil				
Our Reference		334243-78	334243-80	334243-83
Your Reference	UNITS	SDUP3	TB-S1	TB-S2
Depth		-	-	-
Date Sampled		21/09/2023	18/09/2023	25/09/2023
Type of sample		Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	92	93	94

PAHs in Soil						
Our Reference		334243-1	334243-2	334243-6	334243-8	334243-9
Your Reference	UNITS	BH101	BH101	BH102	BH103	BH103
Depth		0.1-0.3	0.6-0.95	0.02-0.2	0.02-0.2	0.6-0.95
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	04/10/2023	04/10/2023	03/10/2023	04/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	112	103	105	106	104

PAHs in Soil						
Our Reference		334243-14	334243-15	334243-18	334243-20	334243-22
Your Reference	UNITS	BH104	BH104	BH104	BH105	TP106
Depth		0-0.2	0.6-0.95	4.6-4.95	0.05-0.2	0-0.2
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	110	106	100	96	98

PAHs in Soil						
Our Reference		334243-24	334243-25	334243-26	334243-28	334243-29
Your Reference	UNITS	TP107	TP107	TP108	TP109	TP109
Depth		0-0.2	0.7-0.9	0-0..2	0-0.2	0.7-0.9
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	04/10/2023	04/10/2023	03/10/2023	04/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	108	100	95	108	98

PAHs in Soil						
Our Reference		334243-30	334243-31	334243-32	334243-34	334243-36
Your Reference	UNITS	TP110	TP110	TP111	TP112	TP113
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.6	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.4	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	2.0	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	101	102	107	100	103

PAHs in Soil						
Our Reference	UNITS	334243-38	334243-39	334243-40	334243-41	334243-42
Your Reference		TP114	TP114	TP115	TP115	TP116
Depth		0-0.2	0.8-1	0-0.2	1.1-1.3	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	04/10/2023	03/10/2023	04/10/2023	03/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	111	104	109	104	114

PAHs in Soil						
Our Reference		334243-44	334243-46	334243-47	334243-48	334243-49
Your Reference	UNITS	TP117	TP118	TP118	TP119	TP119
Depth		0-0.2	0-0.2	1-1.2	0-0.2	0.7-0.9
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	03/10/2023	04/10/2023	04/10/2023	04/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	97	108	100	102	103

PAHs in Soil						
Our Reference		334243-50	334243-51	334243-52	334243-54	334243-56
Your Reference	UNITS	TP120	TP120	TP121	BH122	TP123
Depth		0-0.2	0.6-0.2	0-0.2	0.05-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	19/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	04/10/2023	04/10/2023	04/10/2023	03/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	107	99	105	103	115

PAHs in Soil						
Our Reference		334243-57	334243-58	334243-60	334243-61	334243-62
Your Reference	UNITS	TP123	TP124	TP125	TP125	TP126
Depth		0.6-0.8	0-0.2	0-0.2	0.7-09	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	03/10/2023	04/10/2023	04/10/2023	04/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	109	113	101	101	100

PAHs in Soil						
Our Reference		334243-64	334243-65	334243-66	334243-68	334243-70
Your Reference	UNITS	TP127	TP127	TP128	TP129	TP130
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	03/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	104	106	106	107	107

PAHs in Soil						
Our Reference		334243-71	334243-72	334243-74	334243-76	334243-77
Your Reference	UNITS	TP130	TP131	TP132	SDUP1	SDUP2
Depth		0.5-0.7	0-0.2	0-0.2	-	-
Date Sampled		22/09/2023	22/09/2023	22/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	03/10/2023	03/10/2023	03/10/2023	04/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	102	107	106	112	101

PAHs in Soil				
Our Reference		334243-78	334243-80	334243-83
Your Reference	UNITS	SDUP3	TB-S1	TB-S2
Depth		-	-	-
Date Sampled		21/09/2023	18/09/2023	25/09/2023
Type of sample		Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	100	96	99

Organochlorine Pesticides in soil						
Our Reference		334243-1	334243-8	334243-14	334243-24	334243-28
Your Reference	UNITS	BH101	BH103	BH104	TP107	TP109
Depth		0.1-0.3	0.02-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		19/09/2023	19/09/2023	19/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	113	109	110	112	110

Organochlorine Pesticides in soil						
Our Reference		334243-38	334243-40	334243-42	334243-46	334243-50
Your Reference	UNITS	TP114	TP115	TP116	TP118	TP120
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.9	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	112	109	113	107	107

Organochlorine Pesticides in soil						
Our Reference		334243-56	334243-58	334243-66	334243-70	334243-72
Your Reference	UNITS	TP123	TP124	TP128	TP130	TP131
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	04/10/2023	03/10/2023	03/10/2023
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	116	114	106	110	106

Organochlorine Pesticides in soil			
Our Reference		334243-74	334243-76
Your Reference	UNITS	TP132	SDUP1
Depth		0-0.2	-
Date Sampled		22/09/2023	21/09/2023
Type of sample		Soil	Soil
Date extracted	-	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023
alpha-BHC	mg/kg	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate TCMX	%	109	113

Organophosphorus Pesticides in Soil						
Our Reference		334243-1	334243-8	334243-14	334243-24	334243-28
Your Reference	UNITS	BH101	BH103	BH104	TP107	TP109
Depth		0.1-0.3	0.02-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		19/09/2023	19/09/2023	19/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	113	109	110	112	110

Organophosphorus Pesticides in Soil						
Our Reference		334243-38	334243-40	334243-42	334243-46	334243-50
Your Reference	UNITS	TP114	TP115	TP116	TP118	TP120
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	112	109	113	107	107

Organophosphorus Pesticides in Soil						
Our Reference		334243-56	334243-58	334243-66	334243-70	334243-72
Your Reference	UNITS	TP123	TP124	TP128	TP130	TP131
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	04/10/2023	03/10/2023	03/10/2023
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	116	114	106	110	106

Organophosphorus Pesticides in Soil			
Our Reference		334243-74	334243-76
Your Reference	UNITS	TP132	SDUP1
Depth		0-0.2	-
Date Sampled		22/09/2023	21/09/2023
Type of sample		Soil	Soil
Date extracted	-	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023
Dichlorvos	mg/kg	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1
Surrogate TCMX	%	109	113

PCBs in Soil						
Our Reference		334243-1	334243-8	334243-14	334243-24	334243-28
Your Reference	UNITS	BH101	BH103	BH104	TP107	TP109
Depth		0.1-0.3	0.02-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		19/09/2023	19/09/2023	19/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	113	109	110	112	110

PCBs in Soil						
Our Reference		334243-38	334243-40	334243-42	334243-46	334243-50
Your Reference	UNITS	TP114	TP115	TP116	TP118	TP120
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	112	109	113	107	107

PCBs in Soil						
Our Reference		334243-56	334243-58	334243-66	334243-70	334243-72
Your Reference	UNITS	TP123	TP124	TP128	TP130	TP131
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	04/10/2023	03/10/2023	03/10/2023
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	116	114	106	110	106

PCBs in Soil			
Our Reference		334243-74	334243-76
Your Reference	UNITS	TP132	SDUP1
Depth		0-0.2	-
Date Sampled		22/09/2023	21/09/2023
Type of sample		Soil	Soil
Date extracted	-	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate TCMX	%	109	113

Acid Extractable metals in soil						
Our Reference		334243-1	334243-2	334243-6	334243-8	334243-9
Your Reference	UNITS	BH101	BH101	BH102	BH103	BH103
Depth		0.1-0.3	0.6-0.95	0.02-0.2	0.02-0.2	0.6-0.95
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	13	5	10	7	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	25	27	16	34	27
Copper	mg/kg	31	16	16	25	20
Lead	mg/kg	13	12	9	17	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	18	21	16	20	17
Zinc	mg/kg	55	25	50	39	32

Acid Extractable metals in soil						
Our Reference		334243-14	334243-15	334243-18	334243-20	334243-22
Your Reference	UNITS	BH104	BH104	BH104	BH105	TP106
Depth		0-0.2	0.6-0.95	4.6-4.95	0.05-0.2	0-0.2
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	6	6	<4	6	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	22	27	27	25	10
Copper	mg/kg	31	22	16	14	3
Lead	mg/kg	23	14	27	13	5
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	20	19	14	2
Zinc	mg/kg	96	38	49	30	7

Acid Extractable metals in soil						
Our Reference		334243-24	334243-25	334243-26	334243-28	334243-29
Your Reference	UNITS	TP107	TP107	TP108	TP109	TP109
Depth		0-0.2	0.7-0.9	0-0..2	0-0.2	0.7-0.9
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	<4	8	6	5	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	17	40	28	20	32
Copper	mg/kg	11	24	18	15	21
Lead	mg/kg	9	18	15	75	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	23	17	12	22
Zinc	mg/kg	23	41	35	78	42

Acid Extractable metals in soil						
Our Reference		334243-30	334243-31	334243-32	334243-34	334243-36
Your Reference	UNITS	TP110	TP110	TP111	TP112	TP113
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	8	7	6	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	40	28	25	24	30
Copper	mg/kg	22	21	14	160	18
Lead	mg/kg	18	17	11	49	18
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	26	17	15	19	19
Zinc	mg/kg	36	47	37	120	38

Acid Extractable metals in soil						
Our Reference		334243-38	334243-39	334243-40	334243-41	334243-42
Your Reference	UNITS	TP114	TP114	TP115	TP115	TP116
Depth		0-0.2	0.8-1	0-0.2	1.1-1.3	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	10	7	6	9	12
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	29	35	26	28	26
Copper	mg/kg	41	21	18	27	15
Lead	mg/kg	15	15	23	16	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	17	28	16	20	15
Zinc	mg/kg	38	35	43	69	33

Acid Extractable metals in soil						
Our Reference		334243-44	334243-46	334243-47	334243-48	334243-49
Your Reference	UNITS	TP117	TP118	TP118	TP119	TP119
Depth		0-0.2	0-0.2	1-1.2	0-0.2	0.7-0.9
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	<4	<4	9	8	9
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	14	12	34	30	39
Copper	mg/kg	11	19	21	20	24
Lead	mg/kg	12	12	17	21	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	6	22	19	22
Zinc	mg/kg	35	32	44	72	43

Acid Extractable metals in soil						
Our Reference		334243-50	334243-51	334243-52	334243-54	334243-56
Your Reference	UNITS	TP120	TP120	TP121	BH122	TP123
Depth		0-0.2	0.6-0.2	0-0.2	0.05-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	19/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	4	8	5	8	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	17	33	21	37	10
Copper	mg/kg	15	21	35	21	3
Lead	mg/kg	15	16	17	18	5
Mercury	mg/kg	0.5	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	21	11	29	4
Zinc	mg/kg	65	39	47	44	16

Acid Extractable metals in soil						
Our Reference		334243-57	334243-58	334243-60	334243-61	334243-62
Your Reference	UNITS	TP123	TP124	TP125	TP125	TP126
Depth		0.6-0.8	0-0.2	0-0.2	0.7-09	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	4	<4	5	7	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	21	17	25	36	27
Copper	mg/kg	12	12	14	22	14
Lead	mg/kg	11	8	15	19	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	14	5	17	24	14
Zinc	mg/kg	28	30	28	43	24

Acid Extractable metals in soil						
Our Reference		334243-64	334243-65	334243-66	334243-68	334243-70
Your Reference	UNITS	TP127	TP127	TP128	TP129	TP130
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	5	8	7	6	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	22	35	36	19	26
Copper	mg/kg	13	22	18	14	15
Lead	mg/kg	16	16	15	17	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	10	21	20	14	16
Zinc	mg/kg	26	40	34	33	23

Acid Extractable metals in soil						
Our Reference		334243-71	334243-72	334243-74	334243-76	334243-77
Your Reference	UNITS	TP130	TP131	TP132	SDUP1	SDUP2
Depth		0.5-0.7	0-0.2	0-0.2	-	-
Date Sampled		22/09/2023	22/09/2023	22/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	7	4	4	7	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	32	24	19	31	19
Copper	mg/kg	21	12	10	18	14
Lead	mg/kg	16	12	12	16	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	20	9	10	21	14
Zinc	mg/kg	36	19	18	29	32

Acid Extractable metals in soil					
Our Reference		334243-78	334243-80	334243-83	334243-84
Your Reference	UNITS	SDUP3	TB-S1	TB-S2	BH101 - [TRIPLICATE]
Depth		-	-	-	0.1-0.3
Date Sampled		21/09/2023	18/09/2023	25/09/2023	19/09/2023
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Arsenic	mg/kg	5	<4	<4	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	25	3	4	24
Copper	mg/kg	15	<1	<1	22
Lead	mg/kg	16	3	4	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	17	<1	<1	14
Zinc	mg/kg	30	3	3	40

Moisture						
Our Reference		334243-1	334243-2	334243-6	334243-8	334243-9
Your Reference	UNITS	BH101	BH101	BH102	BH103	BH103
Depth		0.1-0.3	0.6-0.95	0.02-0.2	0.02-0.2	0.6-0.95
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	6.3	17	9.0	17	18

Moisture						
Our Reference		334243-14	334243-15	334243-18	334243-20	334243-22
Your Reference	UNITS	BH104	BH104	BH104	BH105	TP106
Depth		0-0.2	0.6-0.95	4.6-4.95	0.05-0.2	0-0.2
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	11	15	20	9.4	<0.1

Moisture						
Our Reference		334243-24	334243-25	334243-26	334243-28	334243-29
Your Reference	UNITS	TP107	TP107	TP108	TP109	TP109
Depth		0-0.2	0.7-0.9	0-0..2	0-0.2	0.7-0.9
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	4.7	15	15	6.3	14

Moisture						
Our Reference		334243-30	334243-31	334243-32	334243-34	334243-36
Your Reference	UNITS	TP110	TP110	TP111	TP112	TP113
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	16	9.9	20	5.1	14

Moisture						
Our Reference		334243-38	334243-39	334243-40	334243-41	334243-42
Your Reference	UNITS	TP114	TP114	TP115	TP115	TP116
Depth		0-0.2	0.8-1	0-0.2	1.1-1.3	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	7.5	14	12	13	5.6

Moisture						
Our Reference		334243-44	334243-46	334243-47	334243-48	334243-49
Your Reference	UNITS	TP117	TP118	TP118	TP119	TP119
Depth		0-0.2	0-0.2	1-1.2	0-0.2	0.7-0.9
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	14	7.9	15	9.8	15

Moisture						
Our Reference		334243-50	334243-51	334243-52	334243-54	334243-56
Your Reference	UNITS	TP120	TP120	TP121	BH122	TP123
Depth		0-0.2	0.6-0.2	0-0.2	0.05-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	19/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	12	19	7.8	18	4.9

Moisture						
Our Reference		334243-57	334243-58	334243-60	334243-61	334243-62
Your Reference	UNITS	TP123	TP124	TP125	TP125	TP126
Depth		0.6-0.8	0-0.2	0-0.2	0.7-09	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	19	12	5.1	15	8.8

Moisture						
Our Reference		334243-64	334243-65	334243-66	334243-68	334243-70
Your Reference	UNITS	TP127	TP127	TP128	TP129	TP130
Depth		0-0.2	0.6-0.8	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	11	15	15	8.0	13

Moisture						
Our Reference		334243-71	334243-72	334243-74	334243-76	334243-77
Your Reference	UNITS	TP130	TP131	TP132	SDUP1	SDUP2
Depth		0.5-0.7	0-0.2	0-0.2	-	-
Date Sampled		22/09/2023	22/09/2023	22/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Moisture	%	18	12	2.9	14	9.7

Moisture				
Our Reference		334243-78	334243-80	334243-83
Your Reference	UNITS	SDUP3	TB-S1	TB-S2
Depth		-	-	-
Date Sampled		21/09/2023	18/09/2023	25/09/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023
Moisture	%	12	<0.1	5.4

Asbestos ID - soils NEPM - ASB-001						
Our Reference		334243-1	334243-6	334243-8	334243-14	334243-20
Your Reference	UNITS	BH101	BH102	BH103	BH104	BH105
Depth		0.1-0.3	0.02-0.2	0.02-0.2	0-0.2	0.05-0.2
Date Sampled		19/09/2023	19/09/2023	19/09/2023	19/09/2023	19/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Sample mass tested	g	213.11	636.48	535.01	850.81	619.04
Sample Description	-	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		334243-22	334243-24	334243-26	334243-28	334243-30
Your Reference	UNITS	TP106	TP107	TP108	TP109	TP110
Depth		0-0.2	0-0.2	0-0..2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Sample mass tested	g	861.37	816.06	701.53	840.93	568.92
Sample Description	-	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		334243-32	334243-34	334243-36	334243-38	334243-40
Your Reference	UNITS	TP111	TP112	TP113	TP114	TP115
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	21/09/2023	22/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Sample mass tested	g	520.62	518.89	578.14	598.55	620.91
Sample Description	-	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		334243-42	334243-44	334243-46	334243-48	334243-50
Your Reference	UNITS	TP116	TP117	TP118	TP119	TP120
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		21/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Sample mass tested	g	559.62	667.34	662.68	724.36	655.12
Sample Description	-	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		334243-52	334243-54	334243-56	334243-58	334243-60
Your Reference	UNITS	TP121	BH122	TP123	TP124	TP125
Depth		0-0.2	0.05-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	19/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Sample mass tested	g	374.6	456.14	842.12	578.42	724.53
Sample Description	-	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		334243-62	334243-64	334243-66	334243-68	334243-70
Your Reference	UNITS	TP126	TP127	TP128	TP129	TP130
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023	22/09/2023	22/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	06/10/2023	06/10/2023	06/10/2023	06/10/2023	06/10/2023
Sample mass tested	g	634.33	671.68	546.27	481.2	629.12
Sample Description	-	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001			
Our Reference		334243-72	334243-74
Your Reference	UNITS	TP131	TP132
Depth		0-0.2	0-0.2
Date Sampled		22/09/2023	22/09/2023
Type of sample		Soil	Soil
Date analysed	-	06/10/2023	06/10/2023
Sample mass tested	g	716.72	834.04
Sample Description	-	Red coarse-grained soil & rocks	Red coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–
FA and AF Estimation*	g	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001

Misc Inorg - Soil					
Our Reference		334243-9	334243-31	334243-41	334243-57
Your Reference	UNITS	BH103	TP110	TP115	TP123
Depth		0.6-0.95	0.6-0.8	1.1-1.3	0.6-0.8
Date Sampled		19/09/2023	21/09/2023	21/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023
pH 1:5 soil:water	pH Units	8.8	7.9	8.9	8.4

Clay 50-120g					
Our Reference		334243-9	334243-31	334243-41	334243-57
Your Reference	UNITS	BH103	TP110	TP115	TP123
Depth		0.6-0.95	0.6-0.8	1.1-1.3	0.6-0.8
Date Sampled		19/09/2023	21/09/2023	21/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	05/10/2023	05/10/2023	05/10/2023	05/10/2023
Clay in soils <2μm	% (w/w)	46	20	30	51

CEC					
Our Reference		334243-9	334243-31	334243-41	334243-57
Your Reference	UNITS	BH103	TP110	TP115	TP123
Depth		0.6-0.95	0.6-0.8	1.1-1.3	0.6-0.8
Date Sampled		19/09/2023	21/09/2023	21/09/2023	22/09/2023
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	05/10/2023	05/10/2023	05/10/2023	05/10/2023
Date analysed	-	05/10/2023	05/10/2023	05/10/2023	05/10/2023
Exchangeable Ca	meq/100g	1.3	2.5	24	2.7
Exchangeable K	meq/100g	0.2	0.3	2.7	0.2
Exchangeable Mg	meq/100g	1.8	1.1	6.4	2.1
Exchangeable Na	meq/100g	0.5	<0.1	0.3	0.2
Cation Exchange Capacity	meq/100g	3.9	4.0	33	5.2

vTRH(C6-C10)/BTEXN in Water		
Our Reference		334243-81
Your Reference	UNITS	FR1-HA
Depth		-
Date Sampled		22/09/2023
Type of sample		Water
Date extracted	-	30/09/2023
Date analysed	-	01/10/2023
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	102
Surrogate Toluene-d8	%	100
Surrogate 4-Bromofluorobenzene	%	98

svTRH (C10-C40) in Water		
Our Reference		334243-81
Your Reference	UNITS	FR1-HA
Depth		-
Date Sampled		22/09/2023
Type of sample		Water
Date extracted	-	04/10/2023
Date analysed	-	04/10/2023
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	92

PAHs in Water		
Our Reference		334243-81
Your Reference	UNITS	FR1-HA
Depth		-
Date Sampled		22/09/2023
Type of sample		Water
Date extracted	-	04/10/2023
Date analysed	-	06/10/2023
Naphthalene	µg/L	<0.1
Acenaphthylene	µg/L	<0.1
Acenaphthene	µg/L	<0.1
Fluorene	µg/L	<0.1
Phenanthrene	µg/L	<0.1
Anthracene	µg/L	<0.1
Fluoranthene	µg/L	<0.1
Pyrene	µg/L	<0.1
Benzo(a)anthracene	µg/L	<0.1
Chrysene	µg/L	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2
Benzo(a)pyrene	µg/L	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5
Total +ve PAH's	µg/L	<0.1
Surrogate p-Terphenyl-d14	%	109

Metals in Waters - Acid extractable		
Our Reference		334243-81
Your Reference	UNITS	FR1-HA
Depth		-
Date Sampled		22/09/2023
Type of sample		Water
Date prepared	-	03/10/2023
Date analysed	-	03/10/2023
Arsenic - Total	mg/L	<0.05
Cadmium - Total	mg/L	<0.01
Chromium - Total	mg/L	<0.01
Copper - Total	mg/L	0.1
Lead - Total	mg/L	<0.03
Mercury - Total	mg/L	<0.0005
Nickel - Total	mg/L	<0.02
Zinc - Total	mg/L	<0.02

Method ID	Methodology Summary
AS1289.3.6.3	Particle Size Distribution using in house method INORG-107 by way of sieving and/or hydrometer sedimentation testing. Clay fraction at <2µm reported.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	334243-8
Date extracted	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			06/10/2023	1	04/10/2023	04/10/2023		04/10/2023	04/10/2023
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	123	125
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	123	125
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	124	128
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	123	125
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	121	124
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	123	125
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	123	127
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	117	1	80	62	25	106	73

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	334243-40
Date extracted	-			[NT]	24	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	24	04/10/2023	04/10/2023		06/10/2023	04/10/2023
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	24	<25	<25	0	115	79
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	24	<25	<25	0	115	79
Benzene	mg/kg	0.2	Org-023	[NT]	24	<0.2	<0.2	0	112	81
Toluene	mg/kg	0.5	Org-023	[NT]	24	<0.5	<0.5	0	114	79
Ethylbenzene	mg/kg	1	Org-023	[NT]	24	<1	<1	0	115	78
m+p-xylene	mg/kg	2	Org-023	[NT]	24	<2	<2	0	116	80
o-Xylene	mg/kg	1	Org-023	[NT]	24	<1	<1	0	120	79
Naphthalene	mg/kg	1	Org-023	[NT]	24	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	24	74	106	36	116	102

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	334243-56
Date extracted	-			[NT]	42	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	42	06/10/2023	06/10/2023		06/10/2023	06/10/2023
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	42	<25	<25	0	127	122
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	42	<25	<25	0	127	122
Benzene	mg/kg	0.2	Org-023	[NT]	42	<0.2	<0.2	0	132	130
Toluene	mg/kg	0.5	Org-023	[NT]	42	<0.5	<0.5	0	126	122
Ethylbenzene	mg/kg	1	Org-023	[NT]	42	<1	<1	0	125	120
m+p-xylene	mg/kg	2	Org-023	[NT]	42	<2	<2	0	126	120
o-Xylene	mg/kg	1	Org-023	[NT]	42	<1	<1	0	131	125
Naphthalene	mg/kg	1	Org-023	[NT]	42	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	42	111	104	7	114	108

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	50	06/10/2023	06/10/2023		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	50	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	50	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	50	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	50	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	50	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	50	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	50	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	50	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	50	109	109	0	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	66	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	66	06/10/2023	06/10/2023		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	66	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	66	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	66	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	66	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	66	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	66	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	66	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	66	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	66	107	104	3	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	76	06/10/2023	06/10/2023		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	76	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	76	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	76	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	76	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	76	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	76	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	76	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	76	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	76	107	106	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	334243-8
Date extracted	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	133	104
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	124	104
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	115	82
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	133	104
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	124	104
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	115	82
Surrogate o-Terphenyl	%		Org-020	97	1	94	94	0	108	100

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	334243-40
Date extracted	-			[NT]	24	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	24	03/10/2023	03/10/2023		03/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	24	<50	<50	0	133	120
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	24	<100	<100	0	129	115
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	24	<100	<100	0	119	121
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	24	<50	<50	0	133	120
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	24	<100	<100	0	129	115
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	24	<100	<100	0	119	121
Surrogate o-Terphenyl	%		Org-020	[NT]	24	92	91	1	109	130

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	334243-56
Date extracted	-			[NT]	42	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	42	04/10/2023	04/10/2023		04/10/2023	04/10/2023
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	42	<50	<50	0	128	81
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	42	<100	<100	0	120	85
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	42	<100	<100	0	129	101
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	42	<50	<50	0	128	81
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	42	<100	<100	0	120	85
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	42	<100	<100	0	129	101
Surrogate o-Terphenyl	%		Org-020	[NT]	42	94	95	1	109	120

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	50	04/10/2023	04/10/2023		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	50	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	50	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	50	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	50	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	50	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	50	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	50	92	91	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	66	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	66	04/10/2023	04/10/2023		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	66	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	66	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	66	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	66	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	66	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	66	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	66	97	97	0	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	76	04/10/2023	04/10/2023		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	76	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	76	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	76	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	76	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	76	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	76	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	76	91	92	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	334243-8
Date extracted	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	101
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	115	115
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	103
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	108
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	116	112
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	113	111
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	97	99
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	126	126
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	109	1	112	109	3	114	113

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	334243-40
Date extracted	-			[NT]	24	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	24	03/10/2023	03/10/2023		04/10/2023	03/10/2023
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	95	103
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	103	111
Fluorene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	93	101
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	108	104
Anthracene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	102	105
Pyrene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	105	107
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	93	93
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	24	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	24	<0.05	<0.05	0	104	134
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	24	108	114	5	100	108

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	334243-56
Date extracted	-			[NT]	42	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	42	03/10/2023	03/10/2023		04/10/2023	03/10/2023
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	97	107
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	101	117
Fluorene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	92	103
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	104	110
Anthracene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	106	110
Pyrene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	105	113
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	87	99
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	42	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	42	<0.05	<0.05	0	104	114
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	42	114	112	2	101	115

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	50	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	50	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	50	107	105	2	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	66	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	66	04/10/2023	03/10/2023		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	66	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	66	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	66	106	112	6	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	76	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	76	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	76	112	110	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	334243-8
Date extracted	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	106	106
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	100
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	91
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	97
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	107
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	119	117
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	120	118
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	86
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	86
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	100
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	110	1	113	112	1	114	114

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	334243-40
Date extracted	-			[NT]	24	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	24	03/10/2023	03/10/2023		04/10/2023	03/10/2023
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	106	104
HCB	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	102	100
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	103	91
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	111	85
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	104	100
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	103	113
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	128	112
Endrin	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	98	88
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	104	88
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	140	100
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	24	112	113	1	105	108

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	334243-56
Date extracted	-			[NT]	38	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	38	03/10/2023	03/10/2023		04/10/2023	03/10/2023
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	106	106
HCB	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	102	100
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	83	77
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	107	91
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	106	100
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	111	119
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	38	0.9	1.2	29	120	116
Endrin	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	98	74
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	102	88
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	140	80
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	38	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	38	112	101	10	106	117

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	42	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	42	03/10/2023	03/10/2023		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	42	113	114	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	50	107	106	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	66	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	66	04/10/2023	03/10/2023		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	66	106	116	9	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	76	113	109	4	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	334243-8
Date extracted	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	121	115
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	101
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	123	105
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	108
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	102
Fenthion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	122	111
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	111	104
Phosalone	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	110	1	113	112	1	114	114

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	334243-40
Date extracted	-			[NT]	24	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	24	03/10/2023	03/10/2023		04/10/2023	03/10/2023
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	121	117
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	104	99
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	97	111
Malathion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	106	118
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	108	98
Fenthion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	95	113
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	92	108
Phosalone	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	24	112	113	1	105	108

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	334243-56
Date extracted	-			[NT]	42	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	42	03/10/2023	03/10/2023		04/10/2023	03/10/2023
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	135	111
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	102	99
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	111	99
Malathion	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	118	101
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	112	102
Fenthion	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	103	103
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	102	104
Phosalone	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	42	113	114	1	106	117

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	50	107	106	1	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	66	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	66	04/10/2023	03/10/2023		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	66	106	116	9	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	76	113	109	4	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	334243-8
Date extracted	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	117	100
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	110	1	113	112	1	114	114

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	334243-40
Date extracted	-			[NT]	24	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	24	03/10/2023	03/10/2023		04/10/2023	03/10/2023
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	105	100
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	24	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	24	112	113	1	105	108

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	334243-56
Date extracted	-			[NT]	42	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	42	03/10/2023	03/10/2023		04/10/2023	03/10/2023
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	42	<0.1	<0.1	0	101	100
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	42	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	42	113	114	1	106	117

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	50	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	50	107	106	1	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	66	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	66	04/10/2023	03/10/2023		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	66	106	116	9	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	76	113	109	4	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	334243-8
Date prepared	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			04/10/2023	1	04/10/2023	04/10/2023		04/10/2023	04/10/2023
Arsenic	mg/kg	4	Metals-020	<4	1	13	12	8	124	124
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	120	116
Chromium	mg/kg	1	Metals-020	<1	1	25	24	4	125	125
Copper	mg/kg	1	Metals-020	<1	1	31	26	18	122	130
Lead	mg/kg	1	Metals-020	<1	1	13	12	8	124	115
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	103	101
Nickel	mg/kg	1	Metals-020	<1	1	18	13	32	122	118
Zinc	mg/kg	1	Metals-020	<1	1	55	36	42	126	122

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	334243-40
Date prepared	-			[NT]	24	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	24	04/10/2023	04/10/2023		04/10/2023	04/10/2023
Arsenic	mg/kg	4	Metals-020	[NT]	24	<4	<4	0	113	122
Cadmium	mg/kg	0.4	Metals-020	[NT]	24	<0.4	<0.4	0	116	115
Chromium	mg/kg	1	Metals-020	[NT]	24	17	13	27	115	121
Copper	mg/kg	1	Metals-020	[NT]	24	11	9	20	117	129
Lead	mg/kg	1	Metals-020	[NT]	24	9	7	25	115	109
Mercury	mg/kg	0.1	Metals-021	[NT]	24	<0.1	<0.1	0	94	93
Nickel	mg/kg	1	Metals-020	[NT]	24	9	6	40	117	121
Zinc	mg/kg	1	Metals-020	[NT]	24	23	17	30	119	121

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	334243-56
Date prepared	-			[NT]	42	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			[NT]	42	04/10/2023	04/10/2023		04/10/2023	04/10/2023
Arsenic	mg/kg	4	Metals-020	[NT]	42	12	12	0	120	124
Cadmium	mg/kg	0.4	Metals-020	[NT]	42	<0.4	<0.4	0	112	118
Chromium	mg/kg	1	Metals-020	[NT]	42	26	25	4	125	120
Copper	mg/kg	1	Metals-020	[NT]	42	15	17	12	116	125
Lead	mg/kg	1	Metals-020	[NT]	42	17	16	6	125	119
Mercury	mg/kg	0.1	Metals-021	[NT]	42	<0.1	<0.1	0	109	96
Nickel	mg/kg	1	Metals-020	[NT]	42	15	16	6	114	120
Zinc	mg/kg	1	Metals-020	[NT]	42	33	36	9	124	121

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	50	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	50	04/10/2023	04/10/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	50	4	4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	50	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	50	17	15	12	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	50	15	13	14	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	50	15	14	7	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	50	0.5	0.5	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	50	9	7	25	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	50	65	57	13	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	66	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	66	04/10/2023	04/10/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	66	7	8	13	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	66	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	66	36	37	3	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	66	18	19	5	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	66	15	16	6	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	66	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	66	20	25	22	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	66	34	35	3	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	76	03/10/2023	03/10/2023		[NT]	[NT]
Date analysed	-			[NT]	76	04/10/2023	04/10/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	76	7	8	13	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	76	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	76	31	34	9	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	76	18	19	5	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	76	16	18	12	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	76	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	76	21	24	13	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	76	29	33	13	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			03/10/2023	9	03/10/2023	03/10/2023		03/10/2023	[NT]
Date analysed	-			03/10/2023	9	03/10/2023	03/10/2023		03/10/2023	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	9	8.8	8.8	0	101	[NT]

QUALITY CONTROL: CEC					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			05/10/2023	[NT]	[NT]	[NT]	[NT]	05/10/2023	[NT]
Date analysed	-			05/10/2023	[NT]	[NT]	[NT]	[NT]	05/10/2023	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			30/09/2023	[NT]	[NT]	[NT]	[NT]	30/09/2023	[NT]
Date analysed	-			01/10/2023	[NT]	[NT]	[NT]	[NT]	01/10/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	102	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	106	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate Toluene-d8	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			04/10/2023	[NT]	[NT]	[NT]	[NT]	04/10/2023	[NT]
Date analysed	-			04/10/2023	[NT]	[NT]	[NT]	[NT]	04/10/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	64	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	69	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	71	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	64	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	69	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	71	[NT]
Surrogate o-Terphenyl	%		Org-020	86	[NT]	[NT]	[NT]	[NT]	72	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			04/10/2023	[NT]	[NT]	[NT]	[NT]	04/10/2023	[NT]
Date analysed	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	139	[NT]	[NT]	[NT]	[NT]	124	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			03/10/2023	[NT]	[NT]	[NT]	[NT]	03/10/2023	[NT]
Date analysed	-			03/10/2023	[NT]	[NT]	[NT]	[NT]	03/10/2023	[NT]
Arsenic - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	104	[NT]
Cadmium - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Chromium - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	97	[NT]
Copper - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	96	[NT]
Lead - Total	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	98	[NT]
Mercury - Total	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	93	[NT]
Nickel - Total	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	98	[NT]
Zinc - Total	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	97	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Samples were out of the recommended holding time for this analysis pH.

Acid Extractable Metals in Soil: The laboratory RPD acceptance criteria has been exceeded for 334243-1 for Zn. Therefore a triplicate result has been issued as laboratory sample number 334243-84.

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

Note: All samples analysed as received. However, samples 334243-1 & 52 are below the minimum recommended 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

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SAMPLE RECEIPT ADVICE

Client Details	
Client	JK Environments
Attention	C Ridley

Sample Login Details	
Your reference	E35821PR Finley
Envirolab Reference	334243
Date Sample Received	28/09/2023
Date Instructions Received	28/09/2023
Date Results Expected to be Reported	06/10/2023

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	82 Soil, 1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments
Nil

Please direct any queries to:

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Analysis Underway, details on the following page:

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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	Misc Inorg - Soil	Clay 50-120g	CEC	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Waters -Acid extractable	On Hold
BH101-0.1-0.3	✓	✓	✓	✓	✓	✓	✓	✓								
BH101-0.6-0.95	✓	✓	✓				✓									
BH101-1.6-1.95																✓
BH101-3.05-3.45																✓
BH101-4.6-4.95																✓
BH102-0.02-0.2	✓	✓	✓				✓	✓								
BH102-0.6-0.95																✓
BH103-0.02-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
BH103-0.6-0.95	✓	✓	✓				✓		✓	✓	✓					
BH103-1.1-1.4																✓
BH103-1.6-1.95																✓
BH103-3-3.45																✓
BH103-5.8-6																✓
BH104-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
BH104-0.6-0.95	✓	✓	✓				✓									
BH104-1.6-1.95																✓
BH104-3.05-3.45																✓
BH104-4.6-4.95	✓	✓	✓				✓									
BH104-5.8-6.0																✓
BH105-0.05-0.2	✓	✓	✓				✓	✓								
BH105-0.55-0.8																✓
TP106-0-0.2	✓	✓	✓				✓	✓								
TP106-0.9-1.1																✓
TP107-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP107-0.7-0.9	✓	✓	✓				✓									
TP108-0-0..2	✓	✓	✓				✓	✓								
TP108-0.5-0.7																✓
TP109-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP109-0.7-0.9	✓	✓	✓				✓									
TP110-0-0.2	✓	✓	✓				✓	✓								
TP110-0.6-0.8	✓	✓	✓				✓		✓	✓	✓					
TP111-0-0.2	✓	✓	✓				✓	✓								

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	Misc Inorg - Soil	Clay 50-120g	CEC	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Waters -Acid extractable	On Hold
TP111-0.7-0.9																✓
TP112-0-0.2	✓	✓	✓				✓	✓								
TP112-0.7-0.9																✓
TP113-0-0.2	✓	✓	✓				✓	✓								
TP113-0.7-0.9																✓
TP114-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP114-0.8-1	✓	✓	✓				✓									
TP115-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP115-1.1-1.3	✓	✓	✓				✓		✓	✓	✓					
TP116-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP116-0.8-1																✓
TP117-0-0.2	✓	✓	✓				✓	✓								
TP117-0.6-0.2																✓
TP118-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP118-1-1.2	✓	✓	✓				✓									
TP119-0-0.2	✓	✓	✓				✓	✓								
TP119-0.7-0.9	✓	✓	✓				✓									
TP120-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP120-0.6-0.2	✓	✓	✓				✓									
TP121-0-0.2	✓	✓	✓				✓	✓								
TP121-0.7-0.9																✓
BH122-0.05-0.2	✓	✓	✓				✓	✓								
BH122-0.6-0.95																✓
TP123-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP123-0.6-0.8	✓	✓	✓				✓		✓	✓	✓					
TP124-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP124-0.6-0.8																✓
TP125-0-0.2	✓	✓	✓				✓	✓								
TP125-0.7-09	✓	✓	✓				✓									
TP126-0-0.2	✓	✓	✓				✓	✓								
TP126-0.6-0.8																✓
TP127-0-0.2	✓	✓	✓				✓	✓								

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
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Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	Misc Inorg - Soil	Clay 50-120g	CEC	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Waters -Acid extractable	On Hold
TP127-0.6-0.8	✓	✓	✓				✓									
TP128-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP128-0.9-1.1																✓
TP129-0-0.2	✓	✓	✓				✓	✓								
TP129-0.8-1																✓
TP130-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP130-0.5-0.7	✓	✓	✓				✓									
TP131-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP131-0.6-0.8																✓
TP132-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
TP132-0.5-0.7																✓
SDUP1	✓	✓	✓	✓	✓	✓	✓									
SDUP2	✓	✓	✓				✓									
SDUP3	✓	✓	✓				✓									
TS-S1	✓															
TB-S1	✓	✓	✓				✓									
FR1-HA												✓	✓	✓	✓	
TS-S2	✓															
TB-S2	✓	✓	✓				✓									

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E35821PR Date Results Required: STANDARD Page: 1 of 4	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley Cridley@jkenvironments.com.au

Location:	Finley	Sample Preserved in Esky on Ice
Sampler:	OB	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6aNEPM	Combo 3aNEPM		Combo 3	Asbestos (detection)	BTEX		Combo 6	Combo 3	pH/CEC/Clay content		
19/09/2023	1	BH101	0.1-0.3	G,A	0.9	F: Silty Clay	X											
19/09/2023	2	BH101	0.6-0.95	G,A	0.9	F: Silty Clay				X								
19/09/2023	3	BH101	1.6-1.95	G,A	0.8	Silty Clay												
19/09/2023	4	BH101	3.05-3.45	G,A	1.2	Silty Clay												
19/09/2023	5	BH101	4.6-4.95	G,A	0.8	Silty Sandy Clay												
19/09/2023	6	BH102	0.02-0.2	G,A	1.7	F: Silty Clay		X										
19/09/2023	7	BH102	0.6-0.95	G,A	1	Silty Clay												
19/09/2023	8	BH103	0.02-0.2	G,A	25.2	F: Silty Clay	X											
19/09/2023	9	BH103	0.6-0.95	G,A	2.3	Silty Clay				X						X		
19/09/2023	10	BH103	1.1-1.4	G,A	2.5	Silty Clay												
19/09/2023	11	BH103	1.6-1.95	G,A	1	Silty Clay												
19/09/2023	12	BH103	3-3.45	G,A	1.7	Silty Clay												
19/09/2023	13	BH103	5.8-6	G,A	0.7	Silty Clay												
19/09/2023	14	BH104	0-0.2	G,A	4	F: Silty Clay	X											
19/09/2023	15	BH104	0.6-0.95	G,A	14.3	Silty Clay				X								
19/09/2023	16	BH104	1.6-1.95	G,A	1.2	-Silty Clay												
19/09/2023	17	BH104	3.05-3.45	G,A	1.9	Silty Clay												
19/09/2023	18	BH104	4.6-4.95	G,A	1.3	Silty Clay				X								
19/09/2023	19	BH104	5.8-6.0	G,A	0.8	Silty Clay												
19/09/2023	20	BH105	0.05-0.2	G,A	0.9	F: Silty Clay		X										
19/09/2023	21	BH105	0.55-0.8	G,A	0.9	Silty Clay												
21/09/2023	22	TP106	0-0.2	G, A	0.7	F: Silty Sandy Clay		X										
21/09/2023	23	TP106	0.9-1.1	G, A	0.9	Silty Clay												
21/09/2023	24	TP107	0-0.2	G,A	0.7	F: Silty Clay-	X											
21/09/2023	25	TP107	0.7-0.9	G	0.5	F: Silty Clay				X								

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 334243
Date Received: 28/9/23
Time Received: 1600
Received By: DL
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar G1 - 500mL Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles A - Ziplock Asbestos Bag

Relinquished By:	Date:	Time:	Received By:	Date:
OB	28/9/23			

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E35821PR Date Results Required: STANDARD Page: 2 of 4	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley Cridley@jkenvironments.com.au

Location:	Finley	Sample Preserved in Esky on Ice
Sampler:	OB	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6aNEPM	Combo 3aNEPM		Combo 3	Asbestos (detection)	BTEX		Combo 6	Combo 3	pH/CEC/Clay content		
21/09/2023	26	TP108	0-0..2	G,A	0.6	F: Silty Clay		X										
21/09/2023	27	TP108	0.5-0.7	G,A	0.6	Silty Clay												
21/09/2023	28	TP109	0-0.2	G,A	0.9	F: Silty Clay	X											
21/09/2023	29	TP109	0.7-0.9	G,A	1.5	Silty Clay				X								
21/09/2023	30	TP110	0-0.2	G,A	0.8	F: Silty Clay		X										
21/09/2023	31	TP110	0.6-0.8	G,A	0.4	Silty Clay				X						X		
21/09/2023	32	TP111	0-0.2	G,A	0.7	F: Silty Clay		X										
21/09/2023	33	TP111	0.7-0.9	G,A	0.7	Silty Clay												
21/09/2023	34	TP112	0-0.2	G,A	0.8	F: Silty Clay		X										
21/09/2023	35	TP112	0.7-0.9	G,A	1.2	Silty Clay												
22/09/2023	36	TP113	0-0.2	G,A	0.8	F: Silty Clay		X										
22/09/2023	37	TP113	0.7-0.9	G,A	1.2	Silty Clay												
21/09/2023	38	TP114	0-0.2	G,A	1.1	F: Silty Clay	X											
21/09/2023	39	TP114	0.8-1	G,A	0.8	Silty Clay				X								
21/09/2023	40	TP115	0-0.2	G,A	0.9	F: Silty Clay	X											
21/09/2023	41	TP115	1.1-1.3	G,A	0.8	Silty Clay				X						X		
21/09/2023	42	TP116	0-0.2	G,A	1.3	F: Silty Clay	X											
21/09/2023	43	TP116	0.8-1	G,A	2	Silty Clay												
22/09/2023	44	TP117	0-0.2	G,A	0.4	F: Silty Clay		X										
22/09/2023	45	TP117	0.6-~~0.2~~ 0.8	G,A	0.2	Silty Clay												
22/09/2023	46	TP118	0-0.2	G,A	0.1	F: Silty Clay	X											
22/09/2023	47	TP118	1-1.2	G,A	0.4	Silty Clay				X								
22/09/2023	48	TP119	0-0.2	G,A	0.5	F: Silty Clay		X										
22/09/2023	49	TP119	0.7-0.9	G,A	0.4	Silty Clay				X								
22/09/2023	50	TP120	0-0.2	G,A	0.4	F: Silty Clay	X											

Remarks (comments/detection limits required):		Sample Containers: G - 250mg Glass Jar G1 - 500mL Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles A - Ziplock Asbestos Bag		
Relinquished By: OB	Date: 28/9/23	Time:	Received By:	Date:

334243

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E35821PR Date Results Required: STANDARD Page: 2 of 4	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley Cridley@jkenvironments.com.au

Location: Finley

Sampler: OB

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6aNEPM	Combo 3aNEPM		Combo 3	Asbestos (detection)	BTEX		Combo 6	Combo 3	pH/CEC/Clay content		
21/09/2023	26	TP108	0-0..2	G,A	0.6	F: Silty Clay		X										
21/09/2023	27	TP108	0.5-0.7	G,A	0.6	Silty Clay												
21/09/2023	28	TP109	0-0.2	G,A	0.9	F: Silty Clay	X											
21/09/2023	29	TP109	0.7-0.9	G,A	1.5	Silty Clay				X								
21/09/2023	30	TP110	0-0.2	G,A	0.8	F: Silty Clay		X										
21/09/2023	31	TP110 *	0.6-0.8	G,A	0.4	Silty Clay				X						X		
21/09/2023	32	TP111	0-0.2	G,A	0.7	F: Silty Clay		X										
21/09/2023	33	TP111	0.7-0.9	G,A	0.7	Silty Clay												
21/09/2023	34	TP112	0-0.2	G,A	0.8	F: Silty Clay		X										
21/09/2023	35	TP112	0.7-0.9	G,A	1.2	Silty Clay												
22/09/2023	36	TP113	0-0.2	G,A	0.8	F: Silty Clay		X										
22/09/2023	37	TP113	0.7-0.9	G,A	1.2	Silty Clay												
21/09/2023	38	TP114	0-0.2	G,A	1.1	F: Silty Clay	X											
21/09/2023	39	TP114	0.8-1	G,A	0.8	Silty Clay				X								
21/09/2023	40	TP115	0-0.2	G,A	0.9	F: Silty Clay	X											
21/09/2023	41	TP115	1.1-1.3	G,A	0.8	Silty Clay				X						X		
21/09/2023	42	TP116	0-0.2	G,A	1.3	F: Silty Clay	X											
21/09/2023	43	TP116	0.8-1	G,A	2	Silty Clay												
22/09/2023	44	TP117	0-0.2	G,A	0.4	F: Silty Clay		X										
22/09/2023	45	TP117	0.6-~~0.2~~ 0.8	G,A	0.2	Silty Clay												
22/09/2023	46	TP118	0-0.2	G,A	0.1	F: Silty Clay	X											
22/09/2023	47	TP118	1-1.2	G,A	0.4	Silty Clay				X								
22/09/2023	48	TP119	0-0.2	G,A	0.5	F: Silty Clay		X										
22/09/2023	49	TP119	0.7-0.9	G,A	0.4	Silty Clay				X								
22/09/2023	50	TP120	0-0.2	G,A	0.4	F: Silty Clay	X											

Remarks (comments/detection limits required):		Sample Containers: G - 250mg Glass Jar G1 - 500mL Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles A - Ziplock Asbestos Bag		
Relinquished By: OB	Date: 28/9/23	Time:	Received By:	Date:

334243

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E35821PR Date Results Required: STANDARD Page: 3 of 4	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley Cridley@jkenvironments.com.au

Location:	Finley	Sample Preserved in Esky on Ice
Sampler:	OB	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6aNEPM	Combo 3aNEPM		Combo 3	Asbestos (detection)	BTEX		Combo 6	Combo 3	pH/CEC/Clay content		
22/09/2023	51	TP120	0.6-0.2	G,A	0.4	Silty Clay				X								
22/09/2023	52	TP121	0-0.2	G,A	0.4	F: Silty Clay		X										
22/09/2023	53	TP121	0.7-0.9	G,A	0.4	Silty Clay												
19/09/2023	54	BH122	0.05-0.2	G,A	0.9	F: Silty Clay		X										
19/09/2023	55	BH122	0.6-0.95	G,A	0.9	Silty Clay												
22/09/2023	56	TP123	0-0.2	G,A	0.3	F: Silty Clayey Sand	X											
22/09/2023	57	TP123	0.6-0.8	G,A	0.4	Silty Sandy Clay				X						X		
22/09/2023	58	TP124	0-0.2	G,A	0.3	F: Silty Clay	X											
22/09/2023	59	TP124	0.6-0.8	G,A	0.2	Silty Clay												
22/09/2023	60	TP125	0-0.2	G,A	0.4	F: Silty Clay		X										
22/09/2023	61	TP125	0.7-09	G,A	0.3	Silty Clay				X								
22/09/2023	62	TP126	0-0.2	G,A	0.3	F: Silty Clay		X										
22/09/2023	63	TP126	0.6-0.8	G,A	0.3	Silty Clay												
22/09/2023	64	TP127	0-0.2	G,A	0.3	F: Silty Clay		X										
22/09/2023	65	TP127	0.6-0.8	G,A	0.3	Silty Clay				X								
22/09/2023	66	TP128	0-0.2	G,A	0.2	F: Silty Clay	X											
22/09/2023	67	TP128	0.9-1.1	G,A	0.5	Silty Clay												
22/09/2023	68	TP129	0-0.2	G,A	0.3	F: Silty Clay		X										
22/09/2023	69	TP129	0.8-1	G,A	0.4	Silty Clay												
22/09/2023	70	TP130	0-0.2	G,A	0.4	F: Silty Clay	X											
22/09/2023	71	TP130	0.5-0.7	G,A	0.5	Silty Clay				X								
22/09/2023	72	TP131	0-0.2	G,A	0.3	F: Silty Clay	X											
22/09/2023	73	TP131	0.6-0.8	G,A	0.3	Silty Clay												
22/09/2023	74	TP132	0-0.2	G,A	0.3	F: Silty Clay	X											
22/09/2023	75	TP132	0.5-0.7	G,A	0.4	Silty Clay												

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar G1 - 500mL Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles A - Ziplock Asbestos Bag

Relinquished By:	Date:	Time:	Received By:	Date:
OB	28/9/23			

334243

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E35821PR Date Results Required: STANDARD Page: 4 of 4	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley Cridley@jkenvironments.com.au

Location:	Finley	Sample Preserved in Esky on Ice
Sampler:	OB	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6aNEPM	Combo 3aNEPM		Combo 3	Asbestos (detection)	BTEX		Combo 6	Combo 3	pH/CEC/Clay content		
21/09/2023	76	SDUP1	-	G	-	Duplicate								X				
21/09/2023	77	SDUP2	-	G	-	Duplicate									X			
21/09/2023	78	SDUP3	-	G	-	Duplicate									X			
21/09/2023		SDUP4	-	G	-	Duplicate			SEND TO VIC						X			
21/09/2023		SDUP5	-	G	-	Duplicate			SEND TO VIC						X			
21/09/2023		SDUP6	-	G	-	Duplicate			SEND TO VIC					X				
18/09/2023	79	TS-S1	-	V	-	Spike						X						
18/09/2023	80	TB-S1	-	V	-	Blank									X			
22/09/2023	81	FR1-HA	-	G1, H, V	-	Rinsate									X			
25/09/2023	82	TS-S2	-	V	-	Spike						X						
25/09/2023	83	TB-S2	-	V	-	Blank									X			
	~~84~~																	

Remarks (comments/detection limits required):	Sample Containers: G - 250mg Glass Jar G1 - 500mL Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles A - Ziplock Asbestos Bag

Relinquished By:	Date:	Time:	Received By:	Date:
OB	28/9/23			

334243

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CERTIFICATE OF ANALYSIS 39961

Client Details

Client	JK Environments
Attention	Craig Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E35821PR**
Number of Samples	3 Soil
Date samples received	05/10/2023
Date completed instructions received	05/10/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	11/10/2023
Date of Issue	09/10/2023

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Results Approved By
Tara White, Metals Team Leader
Tianna Milburn, Senior Chemist

Authorised By
Pamela Adams, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		39961-1	39961-2	39961-3
Your Reference	UNITS	SDUP4	SDUP5	SDUP6
Date Sampled		21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil
Date extracted	-	05/10/2023	05/10/2023	05/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023
vTRH C_6 - C_9	mg/kg	<25	<25	<25
vTRH C_6 - C_{10}	mg/kg	<25	<25	<25
TRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1
Total BTEX	mg/kg	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	94	95	85

TRH Soil C10-C40 NEPM				
Our Reference		39961-1	39961-2	39961-3
Your Reference	UNITS	SDUP4	SDUP5	SDUP6
Date Sampled		21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil
Date extracted	-	05/10/2023	05/10/2023	05/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	90	93	89

PAHs in Soil				
Our Reference		39961-1	39961-2	39961-3
Your Reference	UNITS	SDUP4	SDUP5	SDUP6
Date Sampled		21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil
Date extracted	-	05/10/2023	05/10/2023	05/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d_{14}	%	100	100	102

OCP in Soil		
Our Reference		39961-3
Your Reference	UNITS	SDUP6
Date Sampled		21/09/2023
Type of sample		Soil
Date extracted	-	05/10/2023
Date analysed	-	06/10/2023
alpha-BHC	mg/kg	<0.1
Hexachlorobenzene	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	0.4
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve reported Aldrin + Dieldrin	mg/kg	0.4
Total +ve reported DDT+DDD+DDE	mg/kg	<0.1
Surrogate 2-chlorophenol-d4	%	90

OP in Soil		
Our Reference		39961-3
Your Reference	UNITS	SDUP6
Date Sampled		21/09/2023
Type of sample		Soil
Date extracted	-	05/10/2023
Date analysed	-	06/10/2023
Azinphos-methyl	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Chlorpyrifos	mg/kg	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Dichlorovos	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Ethion	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Parathion	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Coumaphos	mg/kg	<0.1
Disulfoton	mg/kg	<0.1
Fenamiphos	mg/kg	<0.1
Fenthion	mg/kg	<0.1
Methidathion	mg/kg	<0.1
Mevinphos	mg/kg	<0.1
Methyl Parathion	mg/kg	<0.1
Phorate	mg/kg	<0.1
Phosalone	mg/kg	<0.1
Surrogate 2-chlorophenol-d4	%	90

PCBs in Soil		
Our Reference		39961-3
Your Reference	UNITS	SDUP6
Date Sampled		21/09/2023
Type of sample		Soil
Date extracted	-	05/10/2023
Date analysed	-	06/10/2023
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate 2-fluorobiphenyl	%	100

Acid Extractable metals in soil				
Our Reference		39961-1	39961-2	39961-3
Your Reference	UNITS	SDUP4	SDUP5	SDUP6
Date Sampled		21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil
Date digested	-	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	06/10/2023	06/10/2023	06/10/2023
Arsenic	mg/kg	6	7	8
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	24	24	24
Copper	mg/kg	16	13	14
Lead	mg/kg	17	11	10
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	15	13	15
Zinc	mg/kg	60	27	34

Moisture				
Our Reference		39961-1	39961-2	39961-3
Your Reference	UNITS	SDUP4	SDUP5	SDUP6
Date Sampled		21/09/2023	21/09/2023	21/09/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	06/10/2023	06/10/2023	06/10/2023
Date analysed	-	07/10/2023	07/10/2023	07/10/2023
Moisture	%	9.5	8.4	7.4

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105°C for a minimum of 12 hours.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD or GC-MS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Note, For OCs the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			05/10/2023	[NT]	[NT]	[NT]	[NT]	05/10/2023	[NT]
Date analysed	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	[NT]
vTRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	99	[NT]
vTRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	99	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	97	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	104	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	99	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	93	[NT]	[NT]	[NT]	[NT]	95	[NT]

QUALITY CONTROL: TRH Soil C10-C40 NEPM					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			05/10/2023	[NT]	[NT]	[NT]	[NT]	05/10/2023	[NT]
Date analysed	-			05/10/2023	[NT]	[NT]	[NT]	[NT]	05/10/2023	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	89	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	89	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	88	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
Surrogate o-Terphenyl	%		Org-020	88	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			05/10/2023	[NT]	[NT]	[NT]	[NT]	05/10/2023	[NT]
Date analysed	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Benzo(b,j&k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	96	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-022/025	98	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: OCP in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			05/10/2023	[NT]	[NT]	[NT]	[NT]	05/10/2023	[NT]
Date analysed	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Hexachlorobenzene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: OP in Soil					Duplicate					Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	39961-3
Date extracted	-			05/10/2023	[NT]	[NT]	[NT]	[NT]	05/10/2023	05/10/2023
Date analysed	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	06/10/2023
Azinphos-methyl	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	82	84
Chlorpyrifos-methyl	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	78	78
Diazinon	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	106	104
Dichlorovos	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	114	114
Fenitrothion	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	114	117
Malathion	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methyl Parathion	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	92	90

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	39961-3
Date extracted	-			05/10/2023	[NT]	[NT]	[NT]	[NT]	05/10/2023	05/10/2023
Date analysed	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	06/10/2023
Aroclor 1016	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	78	73
Aroclor 1260	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-fluorobiphenyl	%		Org-022/025	98	[NT]	[NT]	[NT]	[NT]	100	100

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	39961-2
Date digested	-			06/10/2023	2	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Date analysed	-			06/10/2023	2	06/10/2023	06/10/2023		06/10/2023	06/10/2023
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	2	7	6	15	108	94
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	2	<0.4	<0.4	0	107	90
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	2	24	23	4	103	95
Copper	mg/kg	1	Metals-020 ICP-AES	<1	2	13	13	0	103	98
Lead	mg/kg	1	Metals-020 ICP-AES	<1	2	11	13	17	100	87
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	2	<0.1	<0.1	0	95	90
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	2	13	14	7	105	92
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	2	27	26	4	104	101

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500   fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	JK Environments
Attention	Craig Ridley

Sample Login Details	
Your reference	E35821PR
Envirolab Reference	39961
Date Sample Received	05/10/2023
Date Instructions Received	05/10/2023
Date Results Expected to be Reported	11/10/2023

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	3 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	17.0
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Please direct any queries to:

Pamela Adams	Chris De Luca
Phone: 03 9763 2500	**Phone: 03 9763 2500**
Fax: 03 9763 2633	**Fax: 03 9763 2633**
Email: padams@envirolab.com.au	**Email: cdeluca@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
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Sample ID	vTRH(C6-C10)/BTEXN in Soil	TRH Soil C10-C40 NEPM	PAHs in Soil	OCP in Soil	OP in Soil	PCBsin Soil	Acid Extractable metalsin soil
SDUP4	✓	✓	✓				✓
SDUP5	✓	✓	✓				✓
SDUP6	✓	✓	✓	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E35821PR Date Results Required: STANDARD Page: 4 of 4	**FROM:** JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Craig Ridley Cridley@jkenvironments.com.au

Location: Finley | Sample Preserved in Esky on Ice

Sampler: OB | Tests Required

	Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 6aNEPM	Combo 3aNEPM		Combo 3	Asbestos (detection)	BTEX		Combo 6	Combo 3	pH/CEC/Clay content		
	21/09/2023	76	SDUP1	-	G	-	Duplicate								X				
	21/09/2023	77	SDUP2	-	G	-	Duplicate									X			
	21/09/2023	78	SDUP3	-	G	-	Duplicate									X			
1	21/09/2023		SDUP4	-	G	-	Duplicate			SEND TO VIC						X			
2	21/09/2023		SDUP5	-	G	-	Duplicate			SEND TO VIC						X			
3	21/09/2023		SDUP6	-	G	-	Duplicate			SEND TO VIC					X				
	18/09/2023	79	TS-S1	-	V	-	Spike						X						
	18/09/2023	80	TB-S1	-	V	-	Blank									X			
	22/09/2023	81	FR1-HA	-	G1, H, V	-	Rinsate									X			
	25/09/2023	82	TS-S2	-	V	-	Spike						X						
	25/09/2023	83	TB-S2	-	V	-	Blank									X			
		~~84~~																	

ENVIROLAB
Envirolab Services
25 Research Drive
Croydon South VIC 3136
Ph: (03) 9763 2500

Job No: 39961

Date Received: 5/10/23
Time Received: 12:50pm
Received By: AG
Temp: Cool/Ambient 17.0°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required):	**Sample Containers:** G - 250mg Glass Jar G1 - 500mL Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles A - Ziplock Asbestos Bag

Relinquished By:	Date:	Time:	Received By:	Date:
OB	28/9/23			

Relinquished by: ELS SYD
Sarah P Sarah
03/10/23, 1220

334243

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 334225

Client Details	
Client	JK Environments
Attention	C Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details	
Your Reference	**E35821PR, Finley**
Number of Samples	9 Water
Date samples received	28/09/2023
Date completed instructions received	28/09/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details	
Date results requested by	06/10/2023
Date of Issue	06/10/2023

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Liam Timmins, Organics Supervisor
Tim Toll, Chemist (FAS)

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference		334225-1	334225-2	334225-3	334225-4	334225-5
Your Reference	UNITS	MW1	MW3	MW101	MW103	MW104
Date Sampled		26/09/2023	26/09/2023	26/09/2023	26/09/2023	26/09/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	03/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Date analysed	-	05/10/2023	05/10/2023	05/10/2023	05/10/2023	05/10/2023
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	102	101	101	102	103
Surrogate Toluene-d8	%	100	99	100	100	100
Surrogate 4-Bromofluorobenzene	%	100	101	101	100	101

vTRH(C6-C10)/BTEXN in Water					
Our Reference		334225-6	334225-7	334225-8	334225-9
Your Reference	UNITS	GWDUP1	FR2-DIP	TS-W1	TB-W1
Date Sampled		26/09/2023	22/09/2023	25/09/2023	25/09/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023
Date analysed	-	05/10/2023	05/10/2023	05/10/2023	05/10/2023
TRH C_6 - C_9	µg/L	<10	14	[NA]	<10
TRH C_6 - C_{10}	µg/L	<10	15	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	15	[NA]	<10
Benzene	µg/L	<1	<1	106%	<1
Toluene	µg/L	<1	<1	102%	<1
Ethylbenzene	µg/L	<1	<1	115%	<1
m+p-xylene	µg/L	<2	<2	114%	<2
o-xylene	µg/L	<1	<1	111%	<1
Naphthalene	µg/L	<1	<1	[NA]	<1
Surrogate Dibromofluoromethane	%	102	103	103	102
Surrogate Toluene-d8	%	99	99	100	100
Surrogate 4-Bromofluorobenzene	%	100	100	94	99

svTRH (C10-C40) in Water						
Our Reference		334225-1	334225-2	334225-3	334225-4	334225-5
Your Reference	UNITS	MW1	MW3	MW101	MW103	MW104
Date Sampled		26/09/2023	26/09/2023	26/09/2023	26/09/2023	26/09/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	04/10/2023	04/10/2023	04/10/2023	04/10/2023	04/10/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	97	91	97	75	87

svTRH (C10-C40) in Water				
Our Reference		334225-6	334225-7	334225-9
Your Reference	UNITS	GWDUP1	FR2-DIP	TB-W1
Date Sampled		26/09/2023	22/09/2023	25/09/2023
Type of sample		Water	Water	Water
Date extracted	-	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023
TRH C_{10} - C_{14}	µg/L	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50
Surrogate o-Terphenyl	%	65	65	72

PAHs in Water						
Our Reference		334225-1	334225-2	334225-3	334225-4	334225-5
Your Reference	UNITS	MW1	MW3	MW101	MW103	MW104
Date Sampled		26/09/2023	26/09/2023	26/09/2023	26/09/2023	26/09/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Naphthalene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	100	103	103	87	96

PAHs in Water				
Our Reference		334225-6	334225-7	334225-9
Your Reference	UNITS	GWDUP1	FR2-DIP	TB-W1
Date Sampled		26/09/2023	22/09/2023	25/09/2023
Type of sample		Water	Water	Water
Date extracted	-	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023
Naphthalene	µg/L	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	87	70	88

HM in water - dissolved						
Our Reference		334225-1	334225-2	334225-3	334225-4	334225-5
Your Reference	UNITS	MW1	MW3	MW101	MW103	MW104
Date Sampled		26/09/2023	26/09/2023	26/09/2023	26/09/2023	26/09/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023	03/10/2023	03/10/2023
Arsenic-Dissolved	μg/L	4	<1	2	<1	<1
Cadmium-Dissolved	μg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	μg/L	<1	1	<1	2	<1
Copper-Dissolved	μg/L	6	1	1	<1	1
Lead-Dissolved	μg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	μg/L	<0.05	0.06	<0.05	<0.05	<0.05
Nickel-Dissolved	μg/L	24	2	6	1	3
Zinc-Dissolved	μg/L	13	18	27	10	9

HM in water - dissolved				
Our Reference		334225-6	334225-7	334225-9
Your Reference	UNITS	GWDUP1	FR2-DIP	TB-W1
Date Sampled		26/09/2023	22/09/2023	25/09/2023
Type of sample		Water	Water	Water
Date prepared	-	03/10/2023	03/10/2023	03/10/2023
Date analysed	-	03/10/2023	03/10/2023	03/10/2023
Arsenic-Dissolved	μg/L	<1	<1	<1
Cadmium-Dissolved	μg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	μg/L	<1	<1	<1
Copper-Dissolved	μg/L	<1	110	<1
Lead-Dissolved	μg/L	<1	<1	<1
Mercury-Dissolved	μg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	μg/L	3	<1	<1
Zinc-Dissolved	μg/L	8	6	<1

Miscellaneous Inorganics						
Our Reference		334225-1	334225-2	334225-3	334225-4	334225-5
Your Reference	UNITS	MW1	MW3	MW101	MW103	MW104
Date Sampled		26/09/2023	26/09/2023	26/09/2023	26/09/2023	26/09/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	28/09/2023	28/09/2023	28/09/2023	28/09/2023	28/09/2023
Date analysed	-	28/09/2023	28/09/2023	28/09/2023	28/09/2023	28/09/2023
pH	pH Units	7.0	6.5	6.8	7.1	6.9
Electrical Conductivity	µS/cm	16,000	1,600	3,100	1,500	3,500

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Salt forms (e.g. FeO, PbO, ZnO) are determinined stoichiometrically from the base metal concentration.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date extracted	-			03/10/2023	7	04/10/2023	05/10/2023		03/10/2023	[NT]
Date analysed	-			05/10/2023	7	05/10/2023	06/10/2023		05/10/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	7	14	17	19	108	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	7	15	18	18	108	[NT]
Benzene	µg/L	1	Org-023	<1	7	<1	<1	0	105	[NT]
Toluene	µg/L	1	Org-023	<1	7	<1	<1	0	105	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	7	<1	<1	0	108	[NT]
m+p-xylene	µg/L	2	Org-023	<2	7	<2	<2	0	110	[NT]
o-xylene	µg/L	1	Org-023	<1	7	<1	<1	0	108	[NT]
Naphthalene	µg/L	1	Org-023	<1	7	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	7	103	100	3	101	[NT]
Surrogate Toluene-d8	%		Org-023	101	7	99	100	1	102	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	101	7	100	102	2	96	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			03/10/2023	[NT]	[NT]	[NT]	[NT]	03/10/2023	[NT]
Date analysed	-			03/10/2023	[NT]	[NT]	[NT]	[NT]	03/10/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	80	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	71	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	80	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	84	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	71	[NT]
Surrogate o-Terphenyl	%		Org-020	85	[NT]	[NT]	[NT]	[NT]	89	[NT]

QUALITY CONTROL: PAHs in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			03/10/2023	[NT]	[NT]	[NT]	[NT]	03/10/2023	[NT]
Date analysed	-			03/10/2023	[NT]	[NT]	[NT]	[NT]	03/10/2023	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	72	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	79	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	77	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	79	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	68	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	93	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: HM in water - dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	334225-2
Date prepared	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Date analysed	-			03/10/2023	1	03/10/2023	03/10/2023		03/10/2023	03/10/2023
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	4	4	0	114	117
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	112	112
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	117	117
Copper-Dissolved	µg/L	1	Metals-022	<1	1	6	6	0	120	115
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	105	112
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	92	80
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	24	23	4	116	114
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	13	12	8	116	123

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			28/09/2023	1	28/09/2023	28/09/2023		28/09/2023	[NT]
Date analysed	-			28/09/2023	1	28/09/2023	28/09/2023		28/09/2023	[NT]
pH	pH Units		Inorg-001	[NT]	1	7.0	7.0	0	99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	1	16000	16000	0	103	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	JK Environments
Attention	C Ridley

Sample Login Details	
Your reference	E35821PR, Finley
Envirolab Reference	334225
Date Sample Received	28/09/2023
Date Instructions Received	28/09/2023
Date Results Expected to be Reported	06/10/2023

Sample Condition	
Samples received in appropriate condition for analysis	Holding time exceedance
No. of Samples Provided	9 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	11
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

#3- 1 x 125ml HNO3 Plastic unspecified whether filtered/unfiltered. No sediment visible in sample and assumed as filtered

Holding time exceedance pH

Please contact the laboratory within 24 hours if you wish to cancel the aformentioned testing. Otherwise testing will proceed as per the COC and hence invoiced accordingly.

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	HM in water - dissolved	pH	Electrical Conductivity
MW1	✓	✓	✓	✓	✓	✓
MW3	✓	✓	✓	✓	✓	✓
MW101	✓	✓	✓	✓	✓	✓
MW103	✓	✓	✓	✓	✓	✓
MW104	✓	✓	✓	✓	✓	✓
GWDUP1	✓	✓	✓	✓		
FR2-DIP	✓	✓	✓	✓		
TS-W1	✓					
TB-W1	✓	✓	✓	✓		

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO: **ENVIROLAB SERVICES PTY LTD** **12 ASHLEY STREET** **CHATSWOOD NSW 2067** **P: (02) 99106200** **F: (02) 99106201** **Attention: Aileen**	**JKE Job Number:** E35821PR **Date Results Required:** STANDARD **Page:** 1 of 1	**FROM:** **JKEnvironments** **REAR OF 115 WICKS ROAD** **MACQUARIE PARK, NSW 2113** **P: 02-9888 5000 F: 02-9888 5001** **Attention:** Cridley@jkenvironments.com.au

Location:	Finley	**Sample Preserved in Esky on Ice**
Sampler:	OB	**Tests Required**

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 2	Combo 3	VOCs	pH / EC	8 Metals	PAHs	TRH/BTEX	BTEX	Hardness			
26/09/2023	1	MW1	G1, H, V, PVC	0	Water		X		X								
26/09/2023	2	MW3	G1, H, V, PVC	0	Water		X		X								
26/09/2023	3	MW101	G1, H, V, PVC	1.5	Water		X		X								
26/09/2023	4	MW103	G1, H, V, PVC	1.1	Water		X		X								
26/09/2023	5	MW104	G1, H, V, PVC	0.7	Water		X		X								
26/09/2023	6	GWDUP1	G1, H, V, PVC	-	Water		X										
26/09/2023	S/O	GWDUP2	G1, H, V, PVC	-	Water		X		SEND TO VIC								
22/09/2023	~~N/A~~ 7	FR2-DIP	G1, H, V	-	Rinsate		X										
25/09/2023	~~7~~ 8	TS-W1	V	-	Spike								X				
25/09/2023	~~8~~ 9	TB-W1	G1, H, V, PVC	-	Blank		X										

PR 28/9/23

ENVIROLAB GROUP
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 334225
Date Received: 28/9/23
Time Received: 1600
Received By: R
Temp: Cool/Ambient 11°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required):

All analysis PQLs to ANZECC (2000) Detection Limits Please

Sample Containers:
G1 - 500mL Amber Glass Bottle G2 - 1L Amber Glass Bottle
V - BTEX Vial H - HNO3 Wash PVC
PVC - HDPE Plastic Bottles

Relinquished By:	**Date:**	**Time:**	**Received By:**	**Date:**
OB	28/9/23	1600	RG	28/9/23

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
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melbourne@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 39962

Client Details

Client	JK Environments
Attention	Craig Ridley
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	E35821PR
Number of Samples	1 Water
Date samples received	05/10/2023
Date completed instructions received	05/10/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	11/10/2023
Date of Issue	11/10/2023

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Tara White, Metals Team Leader
Tianna Milburn, Senior Chemist

Authorised By
Pamela Adams, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		39962-1
Your Reference	UNITS	GWDUP2
Date Sampled		26/09/2023
Type of sample		Water
Date extracted	-	06/10/2023
Date analysed	-	06/10/2023
TRH C_6 - C_9	μg/L	<10
TRH C_6 - C_{10}	μg/L	<10
TRH C_6 -C_{10} less BTEX (F1)	μg/L	<10
Benzene	μg/L	<1
Toluene	μg/L	<1
Ethylbenzene	μg/L	<1
m+p-xylene	μg/L	<2
o-xylene	μg/L	<1
Naphthalene	μg/L	<1
Total +ve Xylenes	μg/L	<1
Total BTEX in water	μg/L	<1
Surrogate Dibromofluoromethane	%	102
Surrogate toluene-d8	%	102
Surrogate 4-BFB	%	102

TRH Water(C10-C40) NEPM		
Our Reference		39962-1
Your Reference	UNITS	GWDUP2
Date Sampled		26/09/2023
Type of sample		Water
Date extracted	-	09/10/2023
Date analysed	-	09/10/2023
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	83

PAHs in Water		
Our Reference		39962-1
Your Reference	UNITS	GWDUP2
Date Sampled		26/09/2023
Type of sample		Water
Date extracted	-	09/10/2023
Date analysed	-	09/10/2023
Naphthalene	µg/L	<0.1
Acenaphthylene	µg/L	<0.1
Acenaphthene	µg/L	<0.1
Fluorene	µg/L	<0.1
Phenanthrene	µg/L	<0.1
Anthracene	µg/L	<0.1
Fluoranthene	µg/L	<0.1
Pyrene	µg/L	<0.1
Benzo(a)anthracene	µg/L	<0.1
Chrysene	µg/L	<0.1
Benzo(b,j&k)fluoranthene	µg/L	<0.2
Benzo(a)pyrene	µg/L	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1
Total +ve PAH's	µg/L	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5
Surrogate p-Terphenyl-d_{14}	%	91

HM in water - dissolved		
Our Reference	UNITS	39962-1
Your Reference		GWDUP2
Date Sampled		26/09/2023
Type of sample		Water
Date prepared	-	06/10/2023
Date analysed	-	06/10/2023
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	3
Lead-Dissolved	µg/L	<1
Nickel-Dissolved	µg/L	1
Zinc-Dissolved	µg/L	16
Mercury-Dissolved	µg/L	<0.05

Method ID	Methodology Summary
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals-022 ICP-MS	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	[NT]
Date analysed	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	111	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	111	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	109	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-023	103	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate 4-BFB	%		Org-023	103	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: TRH Water(C10-C40) NEPM					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			09/10/2023	[NT]	[NT]	[NT]	[NT]	09/10/2023	[NT]
Date analysed	-			09/10/2023	[NT]	[NT]	[NT]	[NT]	09/10/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate o-Terphenyl	%		Org-020	72	[NT]	[NT]	[NT]	[NT]	73	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			09/10/2023	[NT]	[NT]	[NT]	[NT]	09/10/2023	[NT]
Date analysed	-			09/10/2023	[NT]	[NT]	[NT]	[NT]	09/10/2023	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	123	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	129	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	136	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	137	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	125	[NT]
Benzo(b,j&k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	136	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-022/025	84	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: HM in water - dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	39962-1
Date prepared	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	06/10/2023
Date analysed	-			06/10/2023	[NT]	[NT]	[NT]	[NT]	06/10/2023	06/10/2023
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	100	102
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	[NT]	[NT]	99	101
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	99	98
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	98	96
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	95	96
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	99	96
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	101	103
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	[NT]	[NT]	105	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments
Samples received in good order: No, VOC vials have headspace

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	JK Environments
Attention	Craig Ridley

Sample Login Details	
Your reference	E35821PR
Envirolab Reference	39962
Date Sample Received	05/10/2023
Date Instructions Received	05/10/2023
Date Results Expected to be Reported	11/10/2023

Sample Condition	
Samples received in appropriate condition for analysis	No, VOC vials have headspace
No. of Samples Provided	1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	16.9
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Tests/Analytes BTEX and/or vTRH and/or VOC were received in vials and/or bottles with observable headspace.
Tests/Analytes TRH (C10-40) and PAH have exceeded the recommended technical holding times.

Please contact the laboratory within 24 hours if you wish to cancel the aformentioned testing. Otherwise testing will proceed as per the COC and hence invoiced accordingly.

Please direct any queries to:

Pamela Adams	Chris De Luca
Phone: 03 9763 2500	**Phone: 03 9763 2500**
Fax: 03 9763 2633	**Fax: 03 9763 2633**
Email: padams@envirolab.com.au	**Email: cdeluca@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Water	TRH Water(C10-C40) NEPM	PAHs in Water	HM in water - dissolved
GWDUP2	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E35821PR Date Results Required: STANDARD Page: 1 of 1	**FROM:** JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Cridley@jkenvironments.com.au

Location: Finley — Sample Preserved in Esky on Ice

Sampler: OB — Tests Required

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 2	Combo 3	VOCs	pH / EC	8 Metals	PAHs	TRH/BTEX	BTEX	Hardness			
26/09/2023	1	MW1	G1, H, V, PVC	0	Water		X		X								
26/09/2023	2	MW3	G1, H, V, PVC	0	Water		X		X								
26/09/2023	3	MW101	G1, H, V, PVC	1.5	Water		X		X								
26/09/2023	4	MW103	G1, H, V, PVC	1.1	Water		X		X								
26/09/2023	5	MW104	G1, H, V, PVC	0.7	Water		X		X								
~~26/09/2023~~	6	~~GWDUP1~~	~~G1, H, V, PVC~~	~~-~~	~~Water~~		~~X~~										
1 26/09/2023	S/O	GWDUP2	G1, H, V, PVC	-	Water		X		SEND TO VIC								
22/09/2023	~~N~~ 7	FR2-DIP	G1, H, V	-	Rinsate		X										
PR 28/9/23 25/09/2023	~~7~~ 8	TS-W1	V	-	Spike								X				
25/09/2023	~~8~~ 9	TB-W1	G1, H, V, PVC	-	Blank		X										

ENVIROLAB Envirolab Services 25 Research Drive Croydon South VIC 3136 Ph: (03) 9763 2500
Job No: 39962
Date Received: 5/10/23
Time Received: 12:50PM
Received by: AG
Temp: Cool/Ambient 16.9°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

ENVIROLAB Envirolab Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9910 6200
Job No: 334225
Date Received: 28/9/23
Time Received: 1600
Received By: R
Temp: Cool/Ambient 11°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required): All analysis PQLs to ANZECC (2000) Detection Limits Please	**Sample Containers:** G1 - 500mL Amber Glass Bottle G2 - 1L Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles

Relinquished By:	Date:	Time:	Received By:	Date:
OB	28/9/23	16:00	RG	28/9/23

Relinquished by: ELS SYD
Sarah P Sale
03/10/23. 1220

Appendix F: Report Explanatory Notes

QA/QC Definitions

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)[20] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[21]. The NEPM (2013) is consistent with these documents.

A. <u>Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)</u>

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit"* (Keith, 1991).

B. <u>Precision</u>

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. <u>Accuracy</u>

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. <u>Representativeness</u>

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. <u>Completeness</u>

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;

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[20] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)
[21] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{(\text{Spike Sample Result} - \text{Sample Result}) \times 100}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$

Appendix G: Data (QA/QC) Evaluation

Data (QA/QC) Evaluation

A. INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs documented in the SAQP attached in Appendix J of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness, comparability and completeness. These 'PARCC' parameters are referred to collectively as DQIs and are defined in the Report Explanatory Notes attached in the report appendices.

1. Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

2. Field QA/QC Samples and Analysis

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table Q1 to Table Q2 inclusive) attached to the investigation report and are discussed in the subsequent sections of this Data (QA/QC) Evaluation report. A summary of the field QA/QC samples collected and analysed for this investigation is provided in the following table:

Sample Type	Number Analysed	Frequency (of Sample Type)
Intra-laboratory duplicate (soil)	3	Approximately 5% of primary samples
Inter-laboratory duplicate (soil)	3	As above
Intra-laboratory duplicate (groundwater)	1	Approximately 20% of primary samples
Inter-laboratory duplicate (groundwater)	1	As above
Trip spikes Soil Water	 2 1	Two soil trip spikes and one water trip spike for the investigation to demonstrate adequacy of preservation, storage and transport methods
Trip blanks Soil Water	 2 1	Two soil blanks and one water blank for the investigation to demonstrate adequacy of storage and transport methods
Rinsate soil (Hand Auger)	 1	One soil equipment rinsate and one water equipment rinsate for the investigation to demonstrate adequacy of decontamination methods

Sample Type	Number Analysed	Frequency (of Sample Type)
Water (IP Probe)	1	

3. Data Assessment Criteria

JKE adopted the following criteria for assessing the field and laboratory QA/QC analytical results:

Field Duplicates

Acceptable targets for precision of field duplicates in this report will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Field/Trip Blanks and Rinsates

Acceptable targets for field blank and rinsate samples in this report will be less than the PQL for organic analytes. Metals will be considered on a case-by-case basis with regards to typical background concentrations in soils and published drinking water guidelines for waters.

Trip Spikes

Acceptable targets for trip spike samples in this report will be 70% to 130%.

Laboratory QA/QC

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the laboratory reports. These criteria were developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the acceptable limits adopted by the primary laboratory (Envirolab) is provided below:

RPDs

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes

- 70-130% recovery acceptable for metals and inorganics;
- 60-140% recovery acceptable for organics; and
- 10-140% recovery acceptable for VOCs.

Surrogate Spikes

- 60-140% recovery acceptable for general organics; and
- 10-140% recovery acceptable for VOCs.

Method Blanks

- All results less than PQL.

B. DATA EVALUATION

1. Sample Collection, Storage, Transport and Analysis

Samples were collected by trained field staff in accordance with our standard sampling procedures. Field sampling procedures were designed to be consistent with relevant guidelines, including NEPM (2013) and other guidelines made under the CLM Act 1997.

Appropriate sample preservation, handling and storage procedures were adopted. Laboratory analysis was undertaken generally in accordance with Schedule B(3) of NEPM (2013) and the laboratory NATA accredited methodologies. Envirolab noted that the asbestos results were reported to be consistent with the recommendations in NEPM (2013), however this level of reporting is outside the scope of their NATA accreditation. In the absence of other available analytical methods for asbestos, this was found to be acceptable for the purpose of this investigation.

JKE note that the temperature on receipt of the inter-laboratory duplicate soil and groundwater samples was reported to be up to 17°C. JKE understand that the temperature is measured at the laboratory using an infrared temperature probe by scanning the outside of the sample container (i.e. one sample jar/container at the time of registering the samples). This procedure is not considered to be robust as there is a potential for the outside of the jar to warm to ambient temperature, or at least to increase from that of the internal contents, relatively quickly. JKE consider it is possible that the increase in temperature for the inter-laboratory duplicate samples may also be attributed to the length of time in transit to the secondary laboratory which is based in Victoria. However, based on the BTEX and TRH (F1 and F2) concentrations reported for the primary samples, JKE consider this does not adversely impact on the validity of the data set as a whole. We also note that the trip spike results were acceptable, indicating the field/transport preservation was appropriate.

The laboratory analysis was generally undertaken within the specified holding times. The following exceedances of holding times were identified:

- Report 334225 – The analysis of pH in water samples was undertaken approximately 1-2 days beyond the recommended holding time of 24hrs. The delay in analysis was associated with the remote location of the site in relation to the analytical laboratory. As the samples were stored in appropriate conditions (i.e. chilled) and considering the good correlation between the field measurements during sampling and the analytical results, JKE consider it is unlikely that the pH of the water samples would change dramatically and the results are sufficiently reliable for the purpose of this assessment;
- Report 334243 – The analysis of pH in soils was undertaken approximately one week beyond the recommended holding time. JKE note that the pH analysis was undertaken to establish site-specific EILs. The delay in analysis was associated with the length of the field work program and remote location of the site in relation to the analytical laboratory. As the samples were stored in appropriate conditions (i.e. chilled), and the results indicated the soils to be neutral to basic, JKE consider it is unlikely that the pH of the soil sample would change dramatically and that the results are sufficiently reliable for the purpose of establishing site-specific EILs; and
- Report 39962 – The analysis of TRH (C_{10}-C_{40}) and PAH in water samples was undertaken approximately one week beyond the recommended holding time. The delay in analysis was associated with the

remote location of the site in relation to the secondary analytical laboratory and logistical delays associated with public holidays. JKE note there is potential for some low molecular weight PAHs and the shorter chain TRH compounds (i.e. within the F2 range) to have undergone some degradation in this time. However, JKE note the results were consistent with the analysis of the primary samples which were undertaken within the holding times. On this basis, JKE consider this does not adversely impact on the validity of the data set as a whole.

The laboratory noted that the inter-laboratory duplicate water samples included observable headspace within the vials and/or bottles for BTEX and volatile TRH analysis (Report 39962). JKE subsequently discussed this with the laboratory and were advised that the bottles for TRH analysis included observable headspace within some of the bottles for TRH analysis however, JKE had submitted surplus volume in appropriate bottles that did not contain headspace. JKE were verbally informed by the laboratory staff that the analysis would be conducted on the sample portion (i.e. bottles) that did not contain observable headspace. On this basis, JKE consider this does not adversely impact on the validity of the data set as a whole.

JKE note a few minor transcription errors in relation to depth intervals of samples and sampling dates were recorded on the COC. These were generally corrected however, the sample collected from TP120 (0.6-0.8m) was recorded on the COC and subsequent laboratory reports as TP120 (0.6-0.2m) and the water equipment rinsate sample (FR2-DIP) collected on 26 September 2023 was recorded as being collected on 22 September 2023. JKE consider these transcription errors are minor and does not affect the quality of the dataset as a whole or the outcome of the investigation.

Review of the project data also indicated that:
- COC documentation was adequately maintained;
- Sample receipt advice documentation was provided for all sample batches;
- All analytical results were reported; and
- Consistent units were used to report the analysis results.

2. Laboratory PQLs

Appropriate PQLs were adopted for the analysis and all PQLs were below the SAC with the exception of the anthracene PQL for groundwater analysis which was 10 times greater than the ecological SAC. In light of the PAH concentrations reported for soil and groundwater, JKE is of the opinion that this is not significant, and it does not affect the quality of the dataset as a whole or the outcome of the investigation.

3. Field QA/QC Sample Results

Field Duplicates

The results indicated that field precision was acceptable. RPD non-conformances were reported for some analytes as discussed below:
- Elevated RPDs were reported for arsenic and lead in SDUP5/TP116 (0-0.2m);
- Elevated RPDs were reported for dieldrin (an OCP compound), copper and lead in SDUP6/TP114 (0-0.2m);
- An elevated RPD was reported for copper in GWDUP1/MW104; and
- Elevated RPDs were reported for several metals in GWDUP2/MW3.

Values outside the acceptable limits have been attributed to results close to the PQLs for the water samples. In relation to the soil samples, values outside the acceptable limits have been attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogeneous matrices. As both the primary and duplicate sample results were compared to the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

Trip Blanks

During the investigation, two soil trip blanks and one water trip blank were placed in the eskies during sampling and transported back to the laboratory. The results were all less than the PQLs, therefore cross contamination between samples that may have significance for data validity did not occur.

The soil trip blank analysis results were all less than the PQLs with the exception of chromium, lead and zinc with reported concentrations ranging from 3mg/kg to 4mg/kg. Low level metals concentrations are typical in washed sand which is utilised as blank material. In JKE's experience, the concentrations reported were consistent with background concentrations in a sand matrix and were not indicative of cross-contamination. On this basis, cross contamination between samples that may have significance for data validity did not occur.

The water trip blank analysis results were all less than the PQLs, therefore cross-contamination between samples that may have significance for data validity did not occur.

Rinsates

Within the soil equipment rinsate sample (FR-HA), all results were below the PQL with the exception of copper, which was reported to be 0.1mg/L (100µg/L). Within the water equipment rinsate sample (FR2-DIP), all of the results were below the PQL with the exception of TRH F1, copper and zinc, which were reported to be 15µg/L, 110µg/L and 6µg/L respectively.

Low concentrations of copper and zinc are typical within potable water (which is utilised in the decontamination process) and is likely associated with copper and zinc pipe and fittings within the supply infrastructure. The detectable concentration of light fraction TRH is most likely attributed to trihalomethanes. These compounds are breakdown products from the chlorination process and are common in potable water at the concentration reported. JKE note that the Australian drinking water guideline for copper, zinc and trihalomethanes are 2mg/L (200µg/L), 3mg/L (300µg/L) and 250µg/L respectively.

On this basis, cross contamination between samples that may have significance for data validity did not occur.

Trip Spikes

The results ranged from 96% to 102% for the soil trip spike and from 102% to 115%. These results indicated that field preservation methods were appropriate.

4. Laboratory QA/QC

The analytical methods implemented by the laboratory were performed in accordance with their NATA accreditation and were consistent with Schedule B(3) of NEPM (2013). The frequency of data reported for the laboratory QA/QC (i.e. duplicates, spikes, blanks, LCS) was considered to be acceptable for the purpose of this investigation. A review of the laboratory QA/QC data identified an elevated RPD was reported for zinc in one soil sample. The laboratory subsequently issued the result as a triplicate sample.

The laboratory QA/QC non-conformances were considered to be minor in the context of the overall dataset. JKE considered all primary and laboratory duplicate and triplicate results, therefore the DSI risk assessment was considered to be appropriate.

C. DATA QUALITY SUMMARY

JKE is of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

Non-conformances were reported for some field QA/QC samples and laboratory QA/QC analysis. These non-conformances were considered to be sporadic and minor, and were not considered to be indicative of systematic sampling or analytical errors. On this basis, these non-conformances are not considered to materially impact the report findings.

There was only one groundwater monitoring event undertaken for the investigation. On this basis there is some uncertainty around the representativeness of the groundwater data, particularly during different climatic conditions and after wet/dry periods. However, given the low contaminant concentrations reported, the site history and the surrounding land uses, this is not considered to alter the conclusions of the investigation.

Appendix H: Field Work Documents

JKEnvironments

PID FIELD CALIBRATION FORM

Client:	Health Infrastructure
Project:	Proposed Alterations and Additions
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW
Job Number:	E35821PR

PID

Make: miniRAE LITE	Model: RAE	Unit: 2	Date of last factory calibration: 17/5/23
Date of calibration: 18/9/23		Name of Calibrator: OB	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: 100.2 ppm		Error in measured reading: ± 0.2 ppm	
Measured reading Acceptable (Yes/No): Yes			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading: ± ppm	
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading: ± ppm	
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading: ± ppm	
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration:	100.0 ppm
Measured reading: ppm		Error in measured reading: ± ppm	
Measured reading Acceptable (Yes/No):			

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	Health Infrastructure		
Project:	Proposed Alterations and Additions		
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW		
Job Number:	E35821PR		
DISSOLVED OXYGEN			
Make: YSI		Model: 4	
Date of calibration: 26/9/23		Name of Calibrator: OB	
Span value: 70% to 130%			
Measured value: 105 %			
Measured reading Acceptable (Yes/No): yes			
pH			
Make: YSI		Model: 4	
Date of calibration: 26/9/23		Name of Calibrator: OB	
Buffer 1: Theoretical pH = 7.01± 0.01		Expiry date: 01/24	Lot No: 393113
Buffer 2: Theoretical pH = 4.01± 0.01		Expiry date: 03/24	Lot No: CC180523
Measured reading of Buffer 1: 7.50			
Measured reading of Buffer 2: 4.81			
Slope:		Measured reading Acceptable (Yes/No): yes	
EC			
Make: YSI		Model: 4	
Date: 26/9/23	Name of Calibrator: OB		Temperature: 15 °C
Calibration solution: Rowe Scientific		Expiry date: 02/24	Lot No: CJ210223
Theoretical conductivity at temperature (see solution container): 1143 µS/cm			
Measured conductivity: 1309 µS/cm		Measured reading Acceptable (Yes/No): yes	
REDOX			
Make: YSI		Model: 4	
Date of calibration: 26/9/23		Name of Calibrator: OB	
Calibration solution: HANNA		Expiry date: 09/27	Lot No: 8169
Theoretical redox value: 240mV			
Measured redox reading: 251.1 mV		Measured reading Acceptable (Yes/No): yes	

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	**E35821PR**
Project:	Proposed Alterations and Additions	**Well No.:**	MW1
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	**Depth (m):**	4-9

WELL FINISH

x	**Gatic Cover**		**Standpipe**		**Other (describe)**

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	4.55
Date:	26/9/23	**Time – Before:**	12:40
Undertaken By:	OB	**Total Vol Removed:**	0.55 L
Pump Program No:	Low	**PID (ppm):**	0.0

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
12:49 (3)	4.60	0.2		24.6	1.0	9029	5.48	75.6
12:52 (6)	4.64	0.4	(pump slowed	23.9	0.5	15549	5.81	-4.2
12:55 (9)	4.68	0.5	(pump = slowest setting)	24.0	0.5	15732	6.07	-6.6
12:58 (12)	4.70	0.55		24.4	0.4	15916	6.12	-4.6

start sampling threat of losing water

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

Sampling Containers Used: 2 **x glass amber,** 4 **x BTEX vials,** 1 **x HNO3 plastic,** **x H2SO4 plastic,** 1 **x unpreserved plastic**

YSI used: 4 low silt load. clear, slow recharge

Tested By: Oisin Butler	**Remarks:**
Date Tested: 26/9/23	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10%
Date: 31.10.2023	10% and SWL stable/not in drawdown

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E35821PR
Project:	Proposed Alterations and Additions	**Well No.:**	MW3
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	**Depth (m):**	5.0

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	3.69
Date:	26/9/23	**Time – Before:**	09:15
Undertaken By:	OB	**Total Vol Removed:**	0.9L
Pump Program No:	Low	**PID (ppm):**	0.0

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
9:20 (3)	3.73	0.1		16.7	10.3	35.8	6.31	209.0
9:23 (6)	3.75	0.3		16.8	4.9	1458	6.29	192.1
9:26 (9)	3.79	0.5		16.8	4.7	1503	6.25	201.5
9:29 (12)	3.79	0.7		17.0	4.4	1451	6.25	203.7
9:32 (15)	3.79	0.9		17.0	4.3	1443	6.23	204.8

steady state achieved - start sampling

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

GWDUP2

Sampling Containers Used: 4 x glass amber, 8 x BTEX vials, 2 x HNO3 plastic, x H2SO4 plastic, 2 x unpreserved plastic

YSI used: 4 1-m silt load, light brown, moderate recharge.

Tested By: Oisin Butler	**Remarks:**
Date Tested: 26/9/23	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10%
Date: 31/10/2023	10% and SWL stable/not in drawdown

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	**E35821PR**
Project:	Proposed Alterations and Additions	**Well No.:**	MW101
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	**Depth (m):**	5.70

WELL FINISH

x	**Gatic Cover**		**Standpipe**		**Other (describe)**

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	3.67
Date:	26/9/23	**Time – Before:**	13:48
Undertaken By:	OB	**Total Vol Removed:**	0.8L
Pump Program No:	Low	**PID (ppm):**	1.5

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
13:54 (3)	3.67	0.2		21.2	1.6	3361	5.87	44.0
13:57 (6)	3.67	0.4		21.6	0.8	3196	6.09	29.8
14:00 (9)	3.67	0.6		21.6	0.8	3147	6.14	32.8
14:03 (12)	3.67	0.8		21.2	0.7	3110	6.13	35.9
	steady	state	achieved -	start	sampling			

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

Sampling Containers Used: 2 **x glass amber,** 4 **x BTEX vials,** 1 **x HNO3 plastic,** **x H2SO4 plastic,** 1 **x unpreserved plastic**

YSI used: 4 low silt load, clear, moderate recharge

Tested By: Oisin Butler	**Remarks:**
Date Tested: 26/9/23	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10%
Date: 31/10/2023	10% and SWL stable/not in drawdown

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	**E35821PR**
Project:	Proposed Alterations and Additions	**Well No.:**	MW03
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	**Depth (m):**	5.2

WELL FINISH

✓	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	3.69
Date:	26/9/23	**Time – Before:**	10:53
Undertaken By:	OB	**Total Vol Removed:**	1.0 L
Pump Program No:	Low	**PID (ppm):**	1.1

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
10:56 (3)	3.73	0.2		21.8	2.1	1544	5.69	155.2
10:59 (6)	3.73	0.4		21.8	1.6	1518	5.91	153.7
11:02 (9)	3.73	0.6		21.0	1.7	1496	6.15	150.1
11.05 (12)	3.73	0.8		20.8	1.4	1487	6.25	147.1
11.08 (15)	3.73	1.0		20.9	1.2	1491	6.29	146.2

steady state achieved - start sampling

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

Sampling Containers Used: 2 **x glass amber,** 4 **x BTEX vials,** 1 **x HNO3 plastic, x H2SO4 plastic,** 1 **x unpreserved plastic**

YSI used: 4   1-m siltload, grey brown, moderate recharge

Tested By: Oisin Butler	**Remarks:**
Date Tested: 26/9/23	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10%
Date: 31/10/2023	10% and SWL stable/not in drawdown

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	**E35821PR**
Project:	Proposed Alterations and Additions	**Well No.:**	MW10+
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	**Depth (m):**	5.2

WELL FINISH

X	**Gatic Cover**		**Standpipe**		**Other (describe)**

WELL PURGE DETAILS:

Method:	Peristaltic Pump	**SWL – Before:**	3.64
Date:	26/9/23	**Time – Before:**	08:08
Undertaken By:	OB	**Total Vol Removed:**	0.425 L
Pump Program No:	Low	**PID (ppm):**	6.7

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
08:11 (3)	3.75	0.125	(pump slowed)	15.7	2.4	1742	6.64	231.6
08:14 (6)	3.75	0.2		15.5	1.7	3113	6.68	235.6
08:17 (9)	3.75	0.275		15.6	1.8	3013	6.67	238.5
08:20 (12)	3.75	0.35		15.7	1.8	2975	6.64	241.4
08:23 (15)	3.75	0.425		15.9	2.0	2964	6.61	239.4

steady state achieved – start sampling

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

GWTWP1

Sampling Containers Used: 4 **x glass amber,** 8 **x BTEX vials,** 2 **x HNO3 plastic, x H2SO4 plastic,** 2 **x unpreserved plastic**

YSI used: 4 1-m silt load, brown, moderate recharge

Tested By: Oisin Butler	**Remarks:**
Date Tested: 26/9/23	- Steady state conditions
Checked By: CR	- difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Date: 31/10/2023	

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	Health Infrastructure		
Project:	Proposed Alterations and Additions		
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW		
Job Number:	E35821PR		
DISSOLVED OXYGEN			
Make:		Model:	
Date of calibration:		Name of Calibrator:	
Span value: 70% to 130%			
Measured value: 97%			
Measured reading Acceptable (Yes/No): yes			
pH			
Make: YSI		Model: 4	
Date of calibration: 20/9/23		Name of Calibrator: OB	
Buffer 1: Theoretical pH = 7.01± 0.01		Expiry date: 01/24	Lot No: 293113
Buffer 2: Theoretical pH = 4.01± 0.01		Expiry date: 03/24	Lot No: CC180523
Measured reading of Buffer 1: 7.30			
Measured reading of Buffer 2: 4.61			
Slope:		Measured reading Acceptable (Yes/No): yes	
EC			
Make: YSI		Model: 4	
Date: 20/9/23	Name of Calibrator: OB		Temperature: 20 °C
Calibration solution: Rowe Scientific		Expiry date: 02/24	Lot No: CJ210223
Theoretical conductivity at temperature (see solution container): 1278 µS/cm			
Measured conductivity: 1780 µS/cm		Measured reading Acceptable (Yes/No): yes	
REDOX			
Make: YSI		Model: 4	
Date of calibration: 20/9/23		Name of Calibrator: OB	
Calibration solution: HANNA		Expiry date: 09/27	Lot No: 8169
Theoretical redox value: 240mV			
Measured redox reading: 235.0 mV		Measured reading Acceptable (Yes/No): yes	

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	**E35821PR**
Project:	Proposed Alterations and Additions	**Well No.:**	MW1
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	**Depth (m):**	9.9

WELL FINISH DETAILS

Gatic Cover ☒ Standpipe ☐ Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Development pump	**SWL – Before (m):**	3.64
Date:	20/9/23	**Time – Before:**	12:05
Undertaken By:	OB	**SWL – After (m):**	4.70
Total Vol. Removed:	5L	**Time – After:**	12:17
PID Reading (ppm):	0.0		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
1	18.7	2.6	10958	7.12	24.3
3	17.5	2.6	10383	7.06	22.0
5	17.6	3.2	10726	7.00	20.6

well pumped effectively dry

- GW was soapy, bubbles / foam forming

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 4 M-H silt load, grey brown, L-M recharge

Tested By:	OB	**Remarks:**
Date Tested:	20/9/23	- Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
Checked By:	CR	- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date:	31/10/2023	

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E35821PR
Project:	Proposed Alterations and Additions	**Well No.:**	MW3
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	**Depth (m):**	5.0

WELL FINISH DETAILS

Gatic Cover ☒ Standpipe ☐ Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Development Pump	**SWL – Before (m):**	3.6
Date:	20/9/23	**Time – Before:**	11:20
Undertaken By:	OB	**SWL – After (m):**	4.75
Total Vol. Removed:	6L	**Time – After:**	11:38
PID Reading (ppm):	0.1		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (μS/cm)	pH	Eh (mV)
1	17.8	5.7	512	6.40	113.1
5	17.5	5.3	400	6.49	114.1
6	17.5	5.2	401	6.51	117.1

well pumped effectively dry

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 4 high silt load, brown, l-m recharge

		Remarks:
Tested By:	OB	- Steady state conditions
Date Tested:	20/9/23	- Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
Checked By:	CR	- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date:	31/10/2023	

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E35821PR
Project:	Proposed Alterations and Additions	**Well No.:**	MW101
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	**Depth (m):**	5.70 m

WELL FINISH DETAILS

Gatic Cover ☒ Standpipe ☐ Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Development Pump	**SWL – Before (m):**	3.58
Date:	20/9/23	**Time – Before:**	08:16
Undertaken By:	OB	**SWL – After (m):**	3.58
Total Vol. Removed:	60 L	**Time – After:**	08:55
PID Reading (ppm):	1.0		

Comments:

DEVELOPMENT MEASUREMENTS

	Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
	1	17.1	1.7	2215	7.22	177.1
	5	18.5	0.3	2213	7.07	156.7
	10	18.6	0.1	2073	7.03	140.4
	15	18.6	0.1	2046	6.98	127.4
SWL 3.60	20	18.7	0.1	2098	6.93	112.8
	25	18.6	0.4	2048	6.95	92.9
	30	18.7	0.9	2053	6.93	84.2
SWL 3.60	35	18.8	1.5	2058	6.91	77.5
	40	18.7	1.2	2021	6.89	68.7
	45	18.5	0.7	2058	7.02	67.5
	50	18.7	0.7	2050	7.00	65.0
	55	18.7	0.9	2049	6.97	50.1
3.58	60	18.7	0.7	2046	6.94	55.7

steady state achieved

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 4 High silt load, brown, fast recharge

Tested By:	OB	**Remarks:** - Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date Tested:	20/9/23	
Checked By:	CR	
Date:	31/10/2023	

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E35821PR
Project:	Proposed Alterations and Additions	**Well No.:**	MW103
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	**Depth (m):**	5.2

WELL FINISH DETAILS

Gatic Cover [x] Standpipe [ ] Other (describe) [ ]

WELL DEVELOPMENT DETAILS

Method:	Development pump	**SWL – Before (m):**	3.60
Date:	20/9/23	**Time – Before:**	08:20
Undertaken By:	OB	**SWL – After (m):**	4.20
Total Vol. Removed:	20 L	**Time – After:**	10:00
PID Reading (ppm):	0.5		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
1	17.4	4.3	1460	7.33	83.6
5	18.2	2.3	1306	7.13	85.3
10	18.1	2.8	1362	7.11	98.1
15	19.3	3.1	1266	7.10	98.7
20	18.2	1.3	574	7.04	102.6

SWL 4.20

well pumped effectively dry

- pump not working after 10L - bailer used thereafter

- very high silt load

- bailer was bringing up just silt towards the end

Comments:Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 4 very high silt load, brown, 1-m recharge slight fuel like smell - due to USTs

Tested By:	OB
Date Tested:	20/9/23
Checked By:	CR
Date:	31/10/2023

Remarks:
- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown
- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry

JKEnvironments

Client:	Health Infrastructure	Job No.:	E35821PR
Project:	Proposed Alterations and Additions	Well No.:	MW104
Location:	Finley Hospital, 24 Dawe Avenue, FINLEY, NSW	Depth (m):	5.2

WELL FINISH DETAILS

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Development Pump	SWL – Before (m):	3.60
Date:	20/9/23	Time – Before:	10:24
Undertaken By:	OB	SWL – After (m):	4.75
Total Vol. Removed:	10L	Time – After:	10:50
PID Reading (ppm):	1.5		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
1	17.5	6.4	3009	7.13	140.2
5	17.6	2.6	2529	7.01	140.6
10	17.9	2.2	2874	6.98	138.1

- Development pump stopped working after 5L
- bailer used thereafter
- bailer just pulling up silt

well pumped effectively dry

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 4 very high silt load, brown, 1-m recharge

Tested By:	OB	**Remarks:** - Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductiveity less than 10% and SWL stable/not in drawdown - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date Tested:	20/9/23	
Checked By:	CR	
Date:	31/10/2023	

Appendix I: Guidelines and Reference Documents

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

National Health and Medical Research Council (NHMRC), (2021). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

NSW Department of Environment and Conservation, (2007). Guidelines for the Assessment and Management of Groundwater Contamination

NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

NSW EPA, (2004). Environmentally Hazardous Chemicals Act 1985. Chemical Control Order in Relation to Scheduled Chemical Wastes

NSW EPA, (2014). Waste Classification Guidelines - Part 1: Classifying Waste

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

NSW Health Infrastructure, (2021). Design Guidance Note No. 030. Site Investigations: Project Opportunities and Constraints

NSW Health Infrastructure, (2020). Design Guidance Note No. 060. Contaminated Land Management Framework

Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

Protection of the Environment Operations Act 1997 (NSW)

State Environmental Planning Policy (Resilience and Hazards) 2021 (NSW)

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

Western Australia Department of Health, (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia

Appendix J: Sampling, Analysis & Quality Plan

APPENDIX J

REPORT TO

HEALTH INFRASTRUCTURE

ON

SAMPLING, ANALYSIS AND QUALITY PLAN (SAQP)

FOR

DETAILED (STAGE 2) SITE INVESTIGATION (DSI)

AT

FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Date: 31 August 2023
Ref: E35821PRrpt2

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DOCUMENT REVISION RECORD

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E35821PRrpt2	Final Report	31 August 2023

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This Report has been prepared pursuant to a contract between JKE and the Client and is therefore subject to:
a) JKE's proposal in respect of the work covered by the Report;
b) The limitations defined in the client's brief to JKE; and
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Appendix A: Report Figures
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Abbreviations

Asbestos Fines/Fibrous Asbestos	**AF/FA**
Ambient Background Concentrations	**ABC**
Asphaltic Concrete	**AC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Area of Environmental Concern	**AEC**
Australian Height Datum	**AHD**
Acid Sulfate Soil	**ASS**
Below Ground Level	**BGL**
Benzene, Toluene, Ethylbenzene, Xylene	**BTEX**
Before You Dig Australia	**BYDA**
Cation Exchange Capacity	**CEC**
Contaminated Land Management	**CLM**
Contaminant(s) of Potential Concern	**CoPC**
Chain of Custody	**COC**
Conceptual Site Model	**CSM**
Contaminant Threshold	**CT**
Development Application	**DA**
Design Guidance Note	**DGN**
Data Quality Indicator	**DQI**
Data Quality Objective	**DQO**
Detailed Site Investigation	**DSI**
Ecological Investigation Level	**EIL**
Ecological Screening Level	**ESL**
Environment Protection Authority	**EPA**
Fibre Cement Fragment(s)	**FCF**
Hazardous Building Materials	**HAZMAT**
Health Investigation Level	**HILs**
Health Screening Level	**HSL**
International Organisation of Standardisation	**ISO**
JK Environments	**JKE**
JK Geotechnics	**JKG**
Lab Control Spike	**LCS**
Map Grid of Australia	**MGA**
National Association of Testing Authorities	**NATA**
National Environmental Protection Measure	**NEPM**
No Set Limit	**NSL**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**
Polycyclic Aromatic Hydrocarbons	**PAH**
Polychlorinated Biphenyls	**PCBs**
Photo-ionisation Detector	**PID**
Protection of the Environment Operations	**POEO**
Practical Quantitation Limit	**PQL**
Preliminary Site Investigation	**PSI**
Quality Assurance	**QA**
Quality Control	**QC**
Remediation Action Plan	**RAP**
Relative Percentage Difference	**RPD**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
State Environmental Planning Policy	**SEPP**
Source, Pathway, Receptor	**SPR**
Specific Contamination Concentration	**SCC**

Standard Penetration Test	**SPT**
Standing Water Level	**SWL**
Trip Blank	**TB**
Toxicity Characteristic Leaching Procedure	**TCLP**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
Urban Residential and Public Open Space	**URPOS**
Virgin Excavated Natural Material	**VENM**
Volatile Organic Compounds	**VOC**

Units

Kilometres	**km**
Litres	**L**
Metres BGL	**mBGL**
Metres	**m**
Millivolts	**mV**
Millilitres	**ml or mL**
Micrograms per Litre	**µg/L**
Milligrams per Kilogram	**mg/kg**
Milligrams per Litre	**mg/L**
Parts Per Million	**ppm**
Percentage	**%**
Percentage weight for weight	**%w/w**

1 INTRODUCTION

Health Infrastructure ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed hospital redevelopment at Finley Hospital, 24 Dawe Avenue, Finley, NSW ('the site'). The site location is shown on Figure 1 and the investigation will be confined to the site boundaries as shown on Figure 2 attached in the appendices.

The DSI is required to inform the masterplan and design stage of the proposed hospital redevelopment. JKE note that a DSI is the second step in the contaminated land assessment process for planning approval with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021[1].

This report has been prepared to document the Sampling, Analysis and Quality Plan (SAQP) for the DSI.

JKE have previously undertaken a Preliminary Site Investigation (PSI) at the site. A summary of this information has been included in Section 2. A geotechnical investigation was undertaken in conjunction with the PSI by JK Geotechnics (JKG). Reference is to be made to the JKG geotechnical report[2] for further details.

1.1 Proposed Development Details

JKE understand that the proposed development is currently in the master planning and early design phase of the project. The proposed development will likely include additions to the existing buildings and/or new buildings constructed on the site. The development may also include refurbishment of the existing buildings.

Conceptual drawings were not provided to JKE. However, we anticipate that the proposed development will likely be constructed consistent with the existing levels and expect that only minor earthworks (cut/fill) would be required to accommodate the proposed development.

1.2 Aims and Objectives

The DSI aims to further characterise the site and make an assessment of the soil contamination conditions, and inform the preparation of a Remediation Action Plan (RAP), if required. The objectives of the DSI are to:

- Supplement the PSI data by completing the DSI, including investigation of the soils in accessible areas;
- Assess the potential risks posed by contamination to the receptors identified in the Conceptual Site Model (CSM);
- Provide a preliminary waste classification for off-site disposal of soil;
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

[1] *State Environmental Planning Policy (Resilience and Hazards) 2021* (NSW) (referred to as SEPP Resilience and Hazards 2021)

[2] JKG, (2023). *Report to Health Infrastructure on Geotechnical Investigation for Proposed Alterations and Additions at Finley Hospital, 24 Dawe Avenue, Finley, NSW.* (Ref: 35821YFrpt, dated 14 June 2023) (referred to as JKG report)

1.3 Scope of Work

The SAQP has been prepared generally in accordance with a JKE proposal (Ref: EP58924PR) of 28 June 2023 and written acceptance from the client of 2 August 2023.

The scope of work included review of the PSI and preparation of an SAQP with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)[3], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[4] and Design Guidance Note No. 030 (2021)[5].

A list of reference documents/guidelines is included in the appendices.

[3] National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)

[4] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

[5] Health Infrastructure, (2021). *Design Guidance Note No. 030. Site Investigations: Project Opportunities and Constraints.* (referred to as DGN 030)

2 SITE INFORMATION

2.1 Background

A PSI was previously undertaken by JKE in 2023[6]. The scope of the PSI included a review of site history and site information, a site inspection and soil sampling from 12 locations (BH1 to BH9 and TP10 to TP12 inclusive). The sampling locations are shown on Figure 2 attached in the appendices.

The site was historically used for public recreation until circa 1960, and has been used for a hospital since. Potential contamination sources identified at the site and the immediate surrounds included:

- Historic filling activities;
- Underground storage tanks (USTs) present within the site;
- Use of pesticides;
- Hazardous building materials present within existing and/or former structures;
- On-site generator and associated fuel storage; and
- Maintenance workshop/gardeners shed and associated flammable good store

The PSI identified fill (i.e. historically imported or placed soils) to depths of approximately 0.2m to 0.8m below ground level (BGL), underlain by sandy, silty and clayey alluvial soils. Groundwater seepage was encountered in boreholes BH2 to BH5 inclusive at depths of approximately 3.5m to 4.5mBGL. On completion of auger drilling, the standing water levels (SWLs) in the boreholes were measured to range from approximately 3.8m to 4.8mBGL. The fill typically comprised silty sand, sandy and/or clayey silt and silty clay with inclusions of ash, gravel and root fibres. No stained or odorous fill soils were encountered.

The PSI identified fill soils at one location impacted by hydrocarbons (total recoverable hydrocarbons – TRHs) at concentrations that were above the adopted site assessment criteria (SAC).

The PSI did not identify contamination that would preclude the proposed development and a trigger for remediation was not identified. The following was recommended:

- Undertake a DSI to better assess the risks associated with the areas of environmental concern (AEC)/potential sources of contamination and to assess whether remediation is required; and
- If required (based on the findings of the DSI), a Remediation Action Plan (RAP) is to be prepared. Any requirements documented in a RAP are to be implemented and the site is to be remediated and validated.

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner (Certificate of Title):	Health Administration Corporation
Site Address:	24 Dawe Avenue, Finley, NSW
Lot & Deposited Plan:	Lot 246 in DP1016411

[6] JKE, (2023). *Report to Health infrastructure on Preliminary (Stage 1) Site Investigation for Proposed Alterations and Additions at Finley Hospital, 24 Dawe Avenue, Finley,* NSW. (Ref: E35821PRrpt, dated 21 June 2023). (referred to as PSI)

Current Land Use:	Hospital
Proposed Land Use:	Hospital
Local Government Area:	Berrigan Shire Council
Current Zoning:	RU5: Village
Site Area (m^2) (approx.):	20,000
RL (AHD in m) (approx.):	108-109
Geographical Location (decimal degrees) (approx.):	Latitude: -35.641713 Longitude: 145.568239
Site Location Plan:	Figure 1
Proposed DSI Sample Location Plan:	Figure 2

2.3 Site Description Summary

The site is located in a predominantly residential area of Finley and is bound by Dawe Avenue to the North and Scoullar Street to the south. The site is located approximately 1km to the south-west of Finley Lake (a man-made lake). The regional topography is characterised by a typical flood plain with near level topography. The site itself has similar topography as the surround with near level terrain.

A walkover inspection of the site was undertaken by JKE on 11 May 2023 for the PSI. The inspection was limited to accessible areas of the site and immediate surrounds. An internal inspection of the main hospital and staff accommodation buildings was not undertaken. A summary of the inspection findings is presented below:

- At the time of the inspection, the majority of the site was utilised as a hospital with associated accommodation and maintenance areas;
- Several single-storey buildings of brick and fibre cement construction with metal roofing were observed across the site. The buildings appeared to generally be in good condition based on a cursory inspection;
- A stand-alone garage/shed of metal sheet construction was located in the west of the site and several metal carport and shade structures were observed across the site. The garage/shed and shade structures appeared to be in good condition based on a cursory inspection;
- A crescent-shaped asphaltic concrete (AC) paved driveway provided vehicular ingress/egress from Dawe Avenue. A second AC driveway extended in a southerly direction along the western site boundary from Dawe Avenue which provided vehicular access to the neighbouring property. AC pavement connected these two driveways and was used for ambulance transfers. The pavements appeared to be generally in good condition based on a cursory inspection;
- A gravel driveway was located in the south of the site, extending north-westerly from the south-eastern corner of the site. A gravel carpark was also located in the south of the site;

- Minor quantities of paints, fuel, solvents (mineral turpentine), lubricants and grease were typically stored within the maintenance building (see Figure 2). The products were stored in appropriate containers;
- Two underground storage tanks (USTs) were observed to the west of the maintenance shed and there was a generator to the north-east of the USTs (see Figure 2). JKE was advised by hospital staff that the USTs were no longer in use, though previously contained fuel oil for the on-site boilers;
- Mature native trees (approximately 5m in height) were observed in the north, east and south-east of the site. Flowering plants in formed gardens and shrubbery were observed in the north of the site near the main hospital entrance, and within the west of the site. The vegetation appeared to be generally healthy based on a cursory inspection; and
- Sensitive environments such as wetlands, ponds, creeks or extensive areas of native vegetation were not observed on site or in the immediate surrounds.

During the site inspection, JKE observed the following land uses in the immediate surrounds:
- North – Dawe Avenue, with low-density residential and agricultural land use beyond;
- South – Scoullar Street with low-density residential and retirement living (Alumuna) beyond;
- East – Diggers Park (recreational space) with Donaldson Street and low-density residential beyond; and
- West – residential care facility and medical centre (Finley Regional Care), with Hamilton Street and agricultural land use beyond.

JKE did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site.

2.4 Summary of Geology and Hydrogeology

2.4.1 Regional Geology

Regional geological information presented in the PSI indicated that the site is underlain by alluvial floodplain deposits, which typically consists of silt, very fine to medium-grained lithic to quartz rich sand and clay.

2.4.2 Acid Sulfate Soil (ASS) Risk and Planning

Acid sulfate soil (ASS) risk and planning information presented in the PSI indicated that the site is not located within an ASS risk area.

2.4.3 Hydrogeology and Groundwater

Hydrogeological information presented in the PSI indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes porous, extensive aquifers of low to moderate productivity. There was a total of 42 registered bores within 2km of the site. In summary:
- The nearest registered bore was located approximately 110m to the south of the site. However, this bore had been decommissioned;
- The nearest functioning borehole was located approximately 160m to the east of the site. JKE note this bore is located within a residential property and is assumed to be used for irrigation purposes;

- The drillers log information from the closest registered bores typically identified fill, sand and clay soils with some silt and gravel to terminal depths of approximately 7.3m below ground level (BGL) to 75mBGL. Standing water levels (SWLs) were not recorded in the nearest bores, though ranged from approximately 5.6mBGL to 8.8mBGL in the bores located approximately 600m to 800m to the south-east of the site; and
- The nearest bore to encounter bedrock was approximately 1.2km to the north-east of the site and encountered granite bedrock at a depth of approximately 180mBGL.

The information reviewed for the PSI indicated that the subsurface conditions at the site are likely to consist of moderate to high permeability (alluvial) soils overlying relatively deep bedrock. Abstraction and use of groundwater at the site or in the immediate surrounds may be viable under these conditions, however the use of groundwater is not proposed as part of the development as far as we are aware. There is a reticulated water supply in the area and consumption of groundwater is not expected to occur. JKE note that groundwater may be used in the vicinity of the site for irrigation purposes.

Considering the local topography, surrounding land features and groundwater observations presented in the JKG report, JKE anticipate groundwater to flow towards the south. Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Finley Lake, located approximately 1km to the north-east of the site. This is inferred up-gradient of the site. This water body is man-made and it is unknown whether there is any hydraulic connectivity between the lake and the aquifer.

The nearest natural surface water body is the Tuppal Creek, located approximately 12km to the south-west of the site. Due to the distance from the site, this water body is not considered to be a receptor.

2.5 Summary of Site History Information

A time line summary of the historical land uses and activities is presented in the following table. The information presented in the table is based on a weight of evidence assessment of the site history documentation and observations made by JKE.

Table 2-2: Summary of Historical Land Uses / Activities

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
Prior to 1897	Public recreation (vacant land).	Agricultural (crops and grazing), public recreation and low-density residential.
1897 – c1960	Land dedicated for public recreation (race course). The aerial historical photographs indicate that land clearing/construction of a dedicated race course did not occur within the site. 1955: The dedication of land for a race course was revoked.	
c1960 to date	Hospital and associated activities. Possible filling/importation of materials.	

3 CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

3.1 Potential Contamination Sources/AEC and CoPC

The potential contamination sources/AEC and CoPC are presented in the following table:

Table 3-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
Fill material – The site has been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated, or the material could have been 'site won' and placed during minor earthworks required for regrading paved areas or prior to construction of buildings. The PSI identified filling to depths of approximately 0.2mBGL to 0.8mBGL. The fill contained inclusions of ash and gravel.	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), PAHs, organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.
Fuel storage – Two USTs were identified at the site (see Figure 2). The USTs were historically used to store fuel oil for the boilers at the site.	TRH, BTEX and PAHs
Maintenance Workshop/Gardeners Shed – The site includes a maintenance workshop/gardeners shed and a flammable goods store (see Figure 2). It is possible that leaks/spills and/or releases of oils, solvents and fluids (e.g. turpentine/mineral spirits associated with typical painting activities, rather than chlorinated compounds) may have occurred.	Heavy metals, TRHs and PAHs.
On-site Generator – A back-up generator was observed to the east of the plant room of the main hospital building (see Figure 2). The generator appeared to be self-contained. Minor leaks and/or spills of fuel/oils may have occurred during maintenance and/or use.	TRH, BTEX and PAHs.
Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site.	Heavy metals and OCPs.
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition (renovation) activities. These materials have previously been identified in the existing buildings/ structures on site.	Asbestos, lead and PCBs.

3.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 3-2: CSM

Potential mechanism for contamination	The potential mechanisms for contamination are most likely to include 'top-down' impacts, spills and subsurface release. Subsurface release relates to the USTs.
Affected media	For the DSI, soil and groundwater have been identified as the potentially affected media. The need to assess soil vapour will depend on the initial assessment of the soil and groundwater conditions.
Receptor identification	Human receptors include site occupants/users (including adults and children) in a healthcare setting, construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users (in residential and retirement living setting) and groundwater users (recreation/irrigation use). Ecological receptors include terrestrial organisms and plants within unpaved and landscaped areas.
Potential exposure pathways	Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX), and primary/secondary contract with groundwater for irrigation. The potential for exposure would typically be associated with the construction and excavation works, future use of the site, or groundwater use associated with the use of bore water. Potential exposure pathways for ecological receptors include primary/direct contact and ingestion. Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the buildings (from soil or groundwater contamination); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and • Contact with groundwater during construction and/or migration of groundwater off-site into areas where groundwater is being utilised as a resource (i.e. for irrigation).
Presence of preferential pathways for contaminant movement	Major services (i.e. on the 'Before You Dig Australia' [BYDA] plans) were not identified that would be expected to act as preferential pathways for contamination migration. However, it is noted that localised services exist that are not shown on those plans and the details of such services must be reviewed/considered in further detail in the event mobile contamination is identified.

4 SAMPLING, ANALYSIS AND QUALITY PLAN

4.1 Data Quality Objectives (DQO)

Data Quality Objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2. The DQOs were prepared with reference to the process outlined in Schedule B2 of NEPM (2013). The seven-step DQO approach for this project is outlined in the following sub-sections.

4.1.1 Step 1 - State the Problem

The CSM identified potential sources of contamination/AEC at the site that may pose a risk to human health and the environment. The PSI identified elevated concentrations of TRHs in shallow fill in one location in the south-east of the site.

Investigation data is required to better characterise the site, assess the potential risks posed by the contaminants in the context of the proposed development, and inform the preparation of a RAP (if required). This information will be considered by the project team in the design and delivery of the project as well as by the consent authority in exercising its planning functions in relation to the development proposal.

A waste classification is required prior to off-site disposal of excavated soil/bedrock.

4.1.2 Step 2 - Identify the Decisions of the Study

The objectives of the investigation are outlined in Section 1.2. The decisions to be made reflect these objectives and are as follows:

- Are any results above the SAC?
- Do potential risks associated with contamination exist, and if so, what are they?
- Is remediation required?
- Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

4.1.3 Step 3 - Identify Information Inputs

The primary information inputs required to address the decisions outlined in Step 2 include the following:

- Existing relevant environmental data from previous reports;
- Site information, including site observations and site history documentation;
- Sampling of potentially affected media, including soil and groundwater;
- Observations of sub-surface variables such as soil type, photo-ionisation detector (PID) concentrations, odours and staining, and groundwater physiochemical parameters;
- Laboratory analysis of soils, groundwater and fibre cement (if encountered) for the CoPC identified in the CSM; and
- Field and laboratory QA/QC data.

4.1.4 Step 4 - Define the Study Boundary

The sampling will be confined to the site boundaries as shown on Figure 2 and will be limited vertically to approximately 0.5-1m into natural soils, with a maximum anticipated investigation depth of approximately 6mBGL for the installation of monitoring wells (spatial boundary). The final depth will depend on the encountered site conditions and will be noted in the DSI. At this stage, the sampling is scheduled to be completed in September 2023 (temporal boundary).

Sampling will not be undertaken within the existing building footprints due to access constraints.

4.1.5 Step 5 - Develop an Analytical Approach (or Decision Rule)

4.1.5.1 Tier 1 Screening Criteria

The laboratory data will be assessed against relevant Tier 1 screening criteria (referred to as SAC), as outlined in Section 5. Exceedances of the SAC do not necessarily indicate a requirement for remediation or a risk to human health and/or the environment. Exceedances are considered in the context of the CSM and valid SPR-linkages.

For the DSI, the individual results will be assessed as either above or below the SAC. Statistical evaluation of the dataset via calculation of mean values and/or 95% upper confidence limit (UCL) values is not currently proposed as the sampling locations will be selected judgementally.

4.1.5.2 Field and Laboratory QA/QC

Field QA/QC will include analysis of inter-laboratory duplicates (minimum of 5% of primary samples), intra-laboratory duplicates (minimum of 5% of primary samples), trip spike (for volatiles), trip blank and rinsate samples (one per week of sampling to assess the adequacy of field practices).

Further details regarding the sampling and analysis undertaken, and the acceptable limits adopted, will be included in the Data Quality (QA/QC) Evaluation presented in the DSI report.

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which will be outlined in the laboratory reports. These criteria are developed and implemented in accordance with the laboratory's National Association of Testing Authorities, Australia (NATA) accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence are reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, the most conservative concentration reported are to be adopted.

4.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

The PQLs of the analytical methods are considered in relation to the SAC to confirm that the PQLs are less than the SAC. In cases where the PQLs are greater than the SAC, a discussion of this is provided.

4.1.6 Step 6 – Specify Limits on Decision Errors

To limit the potential for decision errors, a range of quality assurance processes are adopted. A quantitative assessment of the potential for false positives and false negatives in the analytical results is undertaken with reference to Schedule B(3) of NEPM (2013) using the data quality assurance information collected.

Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. For this investigation, the null hypothesis has been adopted which is that, there is considered to be a complete SPR linkage for the CoPC identified in the CSM unless this linkage can be proven not to (or unlikely to) exist. The null hypothesis has been adopted for this investigation.

Quantitative limits on decision errors have not been established as the sample plan is not probabilistic.

4.1.7 Step 7 - Optimise the Design for Obtaining Data

The most resource-effective design will be used in an optimum manner to achieve the investigation objectives. Adjustment of the investigation design can occur following consultation or feedback from project stakeholders. For this investigation, the design will be optimised via consideration of the various lines of evidence used to select the sample locations, the media being sampled, and also by the way in which the data will be collected.

The sampling plan and methodology are outlined in the following sub-sections.

4.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology proposed for the DSI is outlined in the table below:

Table 4-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	Samples will be collected from 32 locations (BH/TP101 to BH/TP133) as shown on the attached Figure 2. In conjunction with the PSI sampling locations within the site boundaries (BH1 to BH5, BH7, BH8 and TP10 to TP12), a total of 42 locations will be sampled. Based on the site area (20,000m^2), this number of locations corresponded to a sampling density of approximately one sample per 475m^2 and meets the DGN 030 requirements of a minimum of one sample per 500m^2. Due to the judgemental sampling plan (discussed below), the sampling plan does not strictly meet the requirements for hotspot identification, as outlined in the NSW EPA Sampling Design Part 1 – Application (2022)[7] contaminated land guidelines. Though we note that, overall, the total number of samples exceeds and the density is higher than the total number of locations that are proposed in these guidelines for the hotspot identification method.

[7] NSW EPA, (2022). *Sampling design part 1 - application.* (referred to as EPA Sampling Design Guidelines 2022)

Aspect	Input
Sampling Plan	The sampling locations will be positioned judgementally for general site coverage. A square grid overlay (approximately 22m x 22m) has been prepared for the site and sample locations will be selected (one per grid) based on access constraints and the existing data set. JKE consider this approach will provide suitable spatial coverage of the site for the DSI objectives. The grid overlay and proposed sampling grids are shown on Figure 2 attached in the appendices. The soil sampling depth will be limited to approximately 0.5-1m into natural soils. Therefore, the test pits and boreholes are anticipated to be limited to depths of approximately 1-2mBGL. Deeper soil samples may be collected from the boreholes targeting the USTs and generator, based on site observations.
Set-out and Sampling Equipment	Sampling locations will be set out using a tape measure and/or a hand-held GPS unit (with an accuracy of ±5m). In-situ sampling locations will be checked for underground services by an external contractor prior to sampling. The majority of samples will be collected using an excavator. Samples will be obtained from the test pit walls or directly from the bucket by hand. Where sampling occurs from the bucket, JKE will collect samples from the central portion of large soil clods, or from material that is unlikely to have come into contact with the bucket. Some locations (generally within paved areas) will be sampled using a drill rig equipped with spiral flight augers (150mm diameter). Soil samples will be obtained from a Standard Penetration Test (SPT) split-spoon sampler, and/or directly from the auger.
Sample Collection and Field QA/QC	Soil samples will be obtained in accordance with our standard field procedures. Soil samples will be collected from the fill and natural profiles based on field observations. The sample depths will be documented on the logs. Samples will be placed in glass jars with plastic caps and Teflon seals with minimal headspace. Samples for asbestos analysis will be placed in zip-lock plastic bags. During sampling, soil at selected depths will be split into primary and duplicate samples for field QA/QC analysis. The field splitting procedure includes alternately filling the sampling containers to obtain a representative split sample.
Field Screening	A portable Photo-ionisation Detector (PID) fitted with a 10.6mV lamp will be used to screen the samples for the presence of volatile organic compounds (VOCs). PID screening for VOCs will be undertaken on soil samples using the soil sample headspace method. VOC data will be obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases. PID calibration records will be maintained throughout the project. The field screening for asbestos quantification included the following: • A representative bulk sample (approximately 10L sample, to the extent achievable based on the sample return) will be collected from fill at 1m intervals, or from each distinct fill profile. The bulk sample intervals will be documented on the logs; • Each bulk sample was weighed using an electronic scale; • Each bulk sample will be passed through a sieve with a 7.1mm aperture and inspected for the presence of fibre cement. Any soil clumps/nodules will be disaggregated. If cohesive soils (i.e.

Aspect	Input
	stiff clays) are encountered, the bulk sample will be placed on a contrasting support (blue tarpaulin) and inspected for the presence of fibre cement fragments (FCF); • The condition of fibre cement or any other suspected asbestos materials will be noted on the field records; and • If observed, any fragments of fibre cement in the 10L sample will be collected, placed in a zip-lock bag and assigned a unique identifier. Calculations for asbestos content will be undertaken based on the requirements outlined in Schedule B1 of NEPM (2013).
Decontamination and Sample Preservation	Sampling personnel will use disposable nitrile gloves during sampling activities. Re-usable sampling equipment was decontaminated using Decon and potable water. Soil samples will be preserved by immediate storage in an insulated sample container with ice. On completion of the fieldwork, the samples will be stored temporarily in fridges in the JKE warehouse before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

4.3 Groundwater Sampling Plan and Methodology

The groundwater sampling plan and methodology proposed for the DSI is outlined in the table below:

Table 4-2: Proposed Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	Groundwater monitoring wells were previously installed in BH1 (MW1) and BH3 (MW3) by JKG as part of the geotechnical investigation. Additional groundwater monitoring wells will be installed in BH101 (MW101), BH103 (MW103) and BH104 (MW104). The wells will be positioned to establish background groundwater conditions at the site. Considering the topography and the location of the nearest down-gradient water body, MW101 is considered to be in the up-gradient area of the site and expected to provide an indication of groundwater flowing onto (beneath) the site from the north. MW3 is considered to be in the intermediate area of the site and is expected to provide an indication of groundwater flowing across (beneath) the site. MW1 is considered to be in the down-gradient area of the site and is expected to provide an indication of groundwater flowing beyond the down-gradient site boundary. MW103 is targeted in close proximity to the location of the disused USTs, and MW104 is targeted in close proximity to the location of the current back-up generator. Various underground services exist in these areas and the final locations will be confirmed following the services scan during fieldwork.
Monitoring Well Installation Procedure	The monitoring well construction details will be documented on the appropriate borehole logs. The monitoring wells will be installed to depths of approximately 4.5m to 6mBGL. The wells will generally be constructed as follows: • 50mm diameter Class 18 PVC (machine slotted screen) installed in the lower section of the well to intersect groundwater; • 50mm diameter Class 18 PVC casing installed in the upper section of the well (screw fixed); • A 2mm sand filter pack used around the screen section for groundwater infiltration; • A hydrated bentonite seal/plug used on top of the sand pack to seal the well; and • A gatic cover installed at the surface with a concrete plug to limit the inflow of surface water.

Aspect	Input
	The monitoring well installation, including the screen lengths, is considered suitable for assessment of general groundwater quality with regards to Table 5 in Schedule B2 of NEPM 2013.
Monitoring Well Development	The monitoring wells will be developed after installation using a submersible electrical pump. During development, the following parameters will be monitored using calibrated field instruments: • Standing water level (SWL) using an electronic dip meter; and • pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh) using a YSI Multi-probe water quality meter. Steady state conditions are considered to have been achieved when the difference in the pH measurements is less than 0.2 units, the difference in conductivity is less than 10%, and when the SWL is not in drawdown. In the event that groundwater in-flow is relatively slow, the development will continue until the wells are effectively dry. The field monitoring records and calibration data will be included in the DSI report.
Groundwater Sampling	The monitoring wells will be allowed to recharge for approximately five to seven days after development. Prior to sampling, the monitoring wells will be checked for the presence of Light Non-Aqueous Phase Liquids (LNAPL) using an inter-phase probe electronic dip meter. The monitoring well head space will be checked for VOCs using a calibrated PID unit. The samples will be obtained using a peristaltic pump. During sampling, the following parameters will be monitored using calibrated field instruments: • SWL using an electronic dip meter; and • pH, temperature, EC, DO and Eh using a YSI Multi-probe water quality meter. Steady state conditions are considered to have been achieved when the difference in the pH measurements is less than 0.2 units, the difference in conductivity is less than 10%, and when the SWL was not in drawdown. Groundwater samples will be obtained directly from the single use PVC tubing and placed in the sample containers. Duplicate samples are to be obtained by alternate filling of sample containers. This technique is adopted to minimise disturbance of the samples and loss of volatile contaminants associated with mixing of liquids in secondary containers, etc. Groundwater removed from the wells during development and sampling will be transported to JKE in jerry cans and stored in holding drums prior to collection by a licensed waste water contractor for off-site disposal. The field monitoring record and calibration data will be included in the DSI report.
Decontaminant and Sample Preservation	During development, the development pump and hose will be flushed between monitoring wells with a potable water and Decon solution, followed by a pulse of potable water (single-use tubing will be used for each well). This will also occur for the inter-phase probe electronic dip meter during development and sampling. The groundwater sampling process utilises a peristaltic pump and single-use tubing, therefore no decontamination procedure for the sampling is considered necessary. Rinsate samples will be obtained during the decontamination process as part of the field QA/QC.

Aspect	Input
	The samples will be preserved with reference to the analytical requirements and placed in an insulated container with ice or ice bricks. On completion of the fieldwork, the samples may be temporarily stored in a fridge at the JKE office, before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.

4.4 Laboratory Analysis and Proposed Analytical Schedule

Samples are to be analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. The proposed laboratory details are provided in the table below:

Table 4-3: Laboratory Details

Samples	Laboratory
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)

For the DSI, an allowance has been made for the following analysis:

- Up to 48 selected soil samples for: heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH; and BTEX;
- Up to 16 selected soil samples for: OCP; OPP; and PCBs;
- Up to 32 selected soil samples (500mL) for asbestos using laboratory quantification (gravimetric) methods;
- Up to six selected FCF, if found on or in soil, analysed for asbestos;
- Up to four targeted soil samples will be analysed for pH; CEC; and clay content for the calculation of EILs for selected metals;
- Targeted toxicity characteristic leachate procedure (TCLP) analysis for selected metals and PAHs for waste classification purposes; and
- Up to five groundwater samples for: heavy metals; TRH/BTEX; low level PAHs; pH; and EC.

The soil analysis will generally target the fill soils and the first contact of natural soils. Deeper samples may be analysed based on the results of the shallow soils and site observations. A staged approach to soil sample analysis is proposed to allow for targeting areas based on the results of the initial analysis round.

5 SITE ASSESSMENT CRITERIA (SAC)

The following SAC derived from the NEPM 2013 and other guidelines, as discussed in the following sub-sections, will be adopted for the DSI.

5.1 Soil

Soil data will be compared to relevant Tier 1 screening criteria in accordance with NEPM (2013) as outlined below.

5.1.1 Human Health

- Health Investigation Levels (HILs) for a 'residential with accessible soils' exposure scenario (HIL-A) HIL-A are selected as a conservative measure due to the extent of landscaping/unsealed areas and the limited information regarding potential development details;
- Health Screening Levels (HSLs) for a 'low-high density residential' exposure scenario (HSL-A & HSL-B). HSLs will be calculated based on conservative assumptions including a 'sand' type and a depth interval of 0m to 1m;
- HSLs for direct contact presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)[8]; and
- Asbestos will be assessed against the HSL-A criteria in soil and as present or absent in FCF. A summary of the asbestos criteria is provided in the table below:

Table 5-1: Details for Asbestos SAC

Guideline	Applicability
Asbestos in Soil	The HSL-A criteria will be adopted for the assessment of asbestos in soil. The SAC adopted for asbestos are derived from the NEPM 2013 and based on the Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2021)[9]. The SAC include the following: • No visible asbestos at the surface/in the top 10cm of soil; • <0.01% w/w bonded asbestos containing material (ACM) in soil; and • <0.001% w/w asbestos fines/fibrous asbestos (AF/FA) in soil. Concentrations for bonded ACM concentrations in soil are based on the following equation which is presented in Schedule B1 of NEPM (2013): $\textbf{\% w/w asbestos in soil} = \frac{\textbf{\% asbestos content x bonded ACM (kg)}}{\text{Soil volume (L) x soil density (kg/L)}}$ However, we are of the opinion that the actual soil volume in a 10L bucket varies considerably due to the presence of voids, particularly when assessing cohesive soils. Therefore, each bucket sample was weighed using electronic scales and the above equation was adjusted as follows (we note that the units have also converted to grams):

[8] Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - *Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document*

[9] Western Australian (WA) Department of Health (DoH), (2021). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. (referred to as WA DoH 2021)

Guideline	Applicability
	% w/w asbestos in soil = % asbestos content x bonded ACM (g) / Soil weight (g)

5.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for an 'urban residential and public open space' (URPOS) exposure scenario. The EILs will only be applied to the top 2m of soil as outlined in NEPM (2013). The criterion for benzo(a)pyrene will be increased from the value presented in NEPM (2013) based on the Canadian Soil Quality Guidelines[10];
- ESLs will be adopted based on the soil type; and
- EILs for selected metals will be calculated based on the most conservative added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013) and published ambient background concentration (ABC) values presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)[11] as an initial screening; and
- Where exceedances of the EILs are recorded, representative samples will be analysed for pH, cation exchange capacity and/or clay content to select alternative ACL values presented in Schedule B(1) of NEPM (2013), based on the site-specific soil parameters.

5.1.3 Management Limits for Petroleum Hydrocarbons

Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) will be considered.

5.1.4 Waste Classification

Data for the waste classification assessment will be assessed in accordance with the Waste Classification Guidelines, Part 1: Classifying Waste (2014)[12] as outlined in the following table:

Table 5-2: Waste Categories

Category	Description
General Solid Waste (non-putrescible)	• If Specific Contaminant Concentration (SCC) ≤ Contaminant Threshold (CT1) then Toxicity Characteristics Leaching Procedure (TCLP) not needed to classify the soil as general solid waste; and • If TCLP ≤ TCLP1 and SCC ≤ SCC1 then treat as general solid waste.
Restricted Solid Waste (non-putrescible)	• If SCC ≤ CT2 then TCLP not needed to classify the soil as restricted solid waste; and • If TCLP ≤ TCLP2 and SCC ≤ SCC2 then treat as restricted solid waste.
Hazardous Waste	• If SCC > CT2 then TCLP not needed to classify the soil as hazardous waste; and • If TCLP > TCLP2 and/or SCC > SCC2 then treat as hazardous waste.

[10] Canadian Council of Ministers of the Environment, (1999). *Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)* (referred to as the Canadian Soil Quality Guidelines)

[11] Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4*. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

[12] NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

Category	Description
Virgin Excavated Natural Material (VENM)	Natural material (such as clay, gravel, sand, soil or rock fines) that meet the following: • That has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial mining or agricultural activities; • That does not contain sulfidic ores or other waste; and • Includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved from time to time by a notice published in the NSW Government Gazette.

5.2 Groundwater

Groundwater data will be compared to relevant Tier 1 screening criteria in accordance with NEPM (2013), following an assessment of environmental values in accordance with the Guidelines for the Assessment and Management of Groundwater Contamination (2007)[13]. Environmental values for the DSI include human uses (incidental contact and recreational water use), and human-health risks in non-use scenarios (vapour intrusion). Though the CSM did not identify ecological groundwater receptors (aquatic ecosystems), the data will be compared to ecological criteria for completeness.

5.2.1 Human Health

- HSLs for a 'low-high density residential' exposure scenario (HSL-A/HSL-B). HSLs will be calculated based on the soil type and the observed depth to groundwater; and
- The Australian Drinking Water Guidelines 2011 (updated 2021)[14] will be multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. with bore water used for irrigation). These have been deemed as 'recreational' SAC.

5.2.2 Environment (Ecological - aquatic ecosystems)

Groundwater Investigation Levels (GILs) for 95% protection of freshwater species will be adopted based on the Default Guideline Values in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)[15]. The 99% trigger values will be adopted where required to account for bioaccumulation. Low and moderate reliability trigger values will also be adopted for some contaminants where high-reliability trigger values don't exist.

[13] NSW Department of Environment and Conservation, (2007). *Guidelines for the Assessment and Management of Groundwater Contamination.*

[14] National Health and Medical Research Council (NHMRC), (2021). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

[15] Australian and New Zealand Governments (ANZG), (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (referred to as ANZG 2018)

6 DSI REPORTING REQUIREMENTS

A DSI report is to be prepared presenting the results of the investigation, in accordance with the NSW EPA Consultants Reporting on Contaminated Land, Contaminated Land Guidelines (2020)[16].

[16] NSW EPA, (2020). *Consultants Reporting on Contaminated Land, Contaminated Land Guidelines*

7 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or land use. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors

This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the investigation. If the subject site is sold, ownership of the investigation report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the investigation was undertaken. No person should apply an investigation for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions

Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an investigation report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data

Site investigations identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an investigation indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Investigation Limitations

Although information provided by a site investigation can reduce exposure to the risk of the presence of contamination, no environmental site investigation can eliminate the risk. Even a rigorous professional investigation may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Investigations by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an investigation report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Investigation Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the investigation. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the investigation. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete investigation should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site investigation is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site investigation, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

Appendix A: Report Figures

APPENDIX J

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

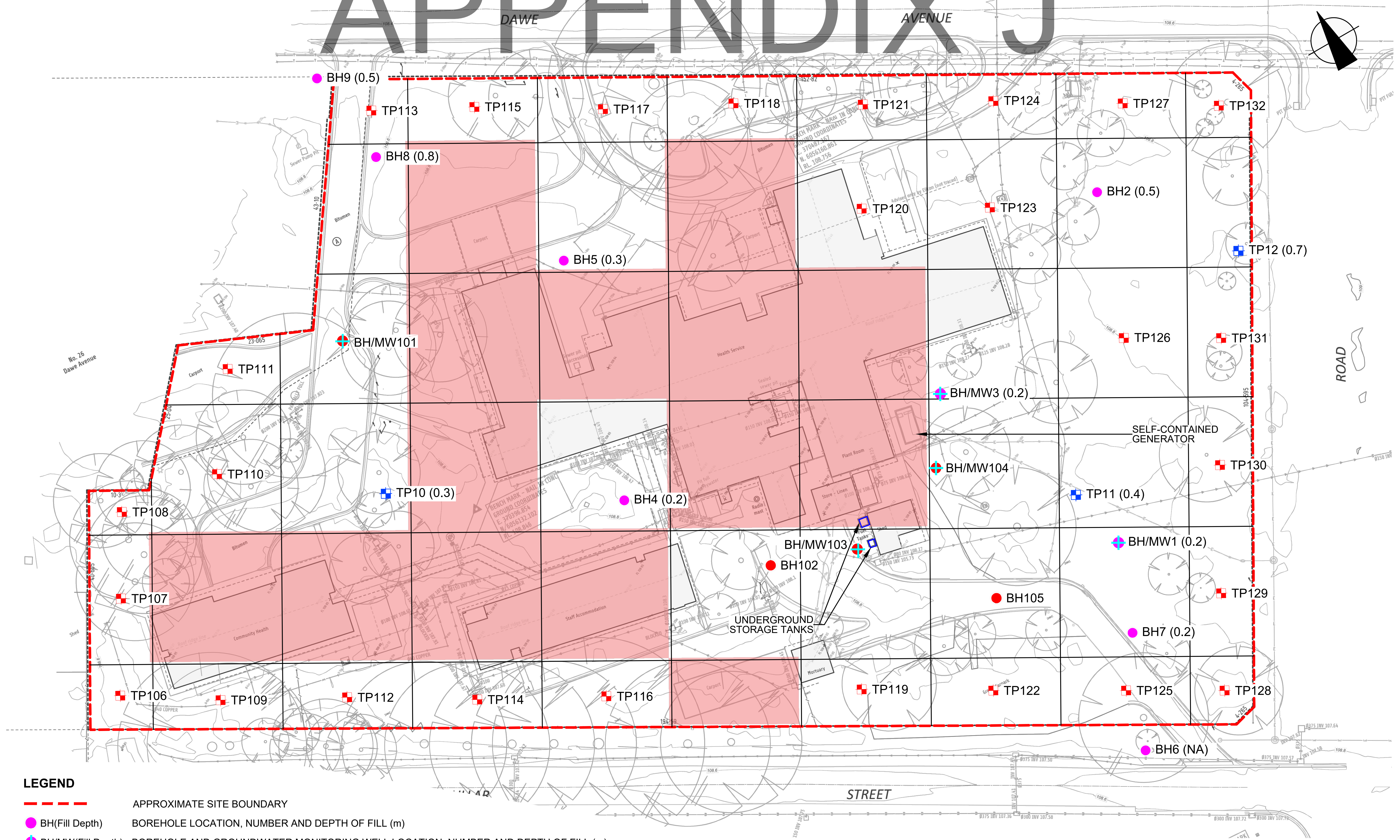
This plan should be read in conjunction with the Environmental report.

Title:	**SITE LOCATION PLAN**
Location:	FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW
Project No:	E35821PR
Figure No:	1

JKEnvironments

PLOT DATE: 25/05/2023 11:36:25 AM DWG FILE: K:\5C EIS JOBS\35000'S\E35821PR FINLEY\CADE\E35821PR.DWG

APPENDIX J



LEGEND

(red dashed line)	APPROXIMATE SITE BOUNDARY
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
TP(Fill Depth)	TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m)
BH101	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW102	PROPOSED BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION AND NUMBER
TP106	PROPOSED TEST PIT LOCATION AND NUMBER
(pink shading)	INACCESSIBLE AREAS

0 6 12 18 24 30
SCALE 1:600 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: **PROPOSED DSI SAMPLING LOCATIONS**

Location: FINLEY HOSPITAL, 24 DAWE AVENUE, FINLEY, NSW

Project No: E35821PR

Figure No: 2

JKEnvironments

PLOT DATE: 22/08/2023 10:06:39 AM DWG FILE: K:\5C EIS JOBS\35000'S\E35821PR FINLEY\CAD\E35821PR.DWG

Appendix B: Report Explanatory Notes

Standard Sampling Procedure (SSP)

These protocols specify the basic procedures to be used when sampling soils or groundwater for environmental site assessments undertaken by JKE.

The purpose of these protocols is to provide standard methods for: sampling, decontamination procedures for sampling equipment, sample preservation, sample storage and sample handling. Deviations from these procedures must be recorded.

A. Soil Sampling

- Prepare a borehole/test pit log or make a note of the sample description for stockpiles.
- Layout sampling equipment on clean plastic sheeting to prevent direct contact with ground surface. The work area should be at a distance from the drill rig/excavator such that the machine can operate in a safe manner.
- Ensure all sampling equipment has been decontaminated prior to use.
- Remove any surface debris from the immediate area of the sampling location.
- Collect samples and place in glass jar with a Teflon seal. This should be undertaken as quickly as possible to prevent the loss of any volatiles. If possible, fill the glass jars completely.
- Collect samples for asbestos analysis and place in a zip-lock plastic bag.
- Label the sampling containers with the JKE job number, sample location (eg. BH1), sampling depth interval and date. If more than one sample container is used, this should also be indicated (eg. 2 = Sample jar 1 of 2 jars).
- Photo-ionisation detector (PID) screening of volatile organic compounds (VOCs) should be undertaken on samples using the soil sample headspace method. Headspace measurements are taken following equilibration of the headspace gasses in partly filled zip-lock plastic bags. PID headspace data is recorded on the borehole/test pit log and the chain of custody forms.
- Record the lithology of the sample and sample depth on the borehole/test pit log generally in accordance with AS1726-1993[17].
- Store the sample in a sample container cooled with ice or chill packs. On completion of the sampling the sample container should be delivered to the lab immediately or stored in the refrigerator prior to delivery to the lab. All samples are preserved in accordance with the standards outlined in the report.
- Check for the presence of groundwater after completion of each borehole using an electronic dip meter or water whistle. Boreholes should be left open until the end of fieldwork. All groundwater levels in the boreholes should be rechecked on the completion of the fieldwork.
- Backfill the boreholes/test pits with the excavation cuttings or clean sand prior to leaving the site.

B. Decontamination Procedures for Soil Sampling Equipment

- All sampling equipment should be decontaminated between every sampling location. This excludes single use PVC tubing used for push tubes etc. Equipment and materials required for the decontamination include:
  - Phosphate free detergent (Decon 90);
  - Potable water;
  - Stiff brushes; and
  - Plastic sheets.
    - Ensure the decontamination materials are clean prior to proceeding with the decontamination.
    - Fill both buckets with clean potable water and add phosphate free detergent to one bucket.

[17] Standards Australia, (1993), *Geotechnical Site Investigations.* (AS1726-1993)

- In the bucket containing the detergent, scrub the sampling equipment until all the material attached to the equipment has been removed.
- Rinse sampling equipment in the bucket containing potable water.
- Place cleaned equipment on clean plastic sheets.

If all materials are not removed by this procedure, high-pressure water cleaning is recommended. If any equipment is not completely decontaminated by both these processes, then the equipment should not be used until it has been thoroughly cleaned.

C. Groundwater Sampling

Groundwater samples are more sensitive than soil samples and therefore adhesion to this protocol is particularly important to obtain reliable, reproducible results. The recommendations detailed in AS/NZS 5667.1:1998 are considered to form a minimum standard. The basis of this protocol is to maintain the security of the borehole and obtain accurate and representative groundwater samples. The following procedure should be used for collection of groundwater samples from previously installed groundwater monitoring wells.

- After monitoring well installation, at least three bore volumes should be pumped from the monitoring wells (well development) to remove any water introduced during the drilling process and/or the water that is disturbed during installation of the monitoring well. This should be completed prior to purging and sampling.
- Groundwater monitoring wells should then be left to recharge for at least three days before purging and sampling. Prior to purging or sampling, the condition of each well should observed and any anomalies recorded on the field data sheets. The following information should be noted: the condition of the well, noting any signs of damage, tampering or complete destruction; the condition and operation of the well lock; the condition of the protective casing and the cement footing (raised or cracked); and, the presence of water between protective casing and well.
- Take the groundwater level from the collar of the piezometer/monitoring well using an electronic dip meter. The collar level should be taken (if required) during the site visit using a dumpy level and staff.
- Purging and sampling of piezometers/monitoring wells is done on the same site visit when using micro-purge (or other low flow) techniques.
- Layout and organize all equipment associated with groundwater sampling in a location where they will not interfere with the sampling procedure and will not pose a risk of contaminating samples. Equipment generally required includes:
  - Micropore filtration system or Stericup single-use filters (for heavy metals samples);
  - Filter paper for Micropore filtration system; Bucket with volume increments;
  - Sample containers: Teflon bottles with 1 ml nitric acid, 75mL glass vials with 1 mL hydrochloric acid, 1 L amber glass bottles;
  - Bucket with volume increments;
  - Flow cell;
  - pH/EC/Eh/T meters;
  - Plastic drums used for transportation of purged water;
  - Esky and ice;
  - Nitrile gloves;
  - Distilled water (for cleaning);
  - Electronic dip meter;
  - Low flow pump pack and associated tubing; and
  - Groundwater sampling forms.

- If single-use stericup filtration is not used, clean the Micropore filtration system thoroughly with distilled water prior to use and between each sample. Filter paper should be changed between samples. 0.45um filter paper should be placed below the glass fibre filter paper in the filtration system.
- Ensure all non-disposable sampling equipment is decontaminated or that new disposable equipment is available prior to any work commencing at a new location. The procedure for decontamination of groundwater equipment is outlined at the end of this section.
- Disposable gloves should be used whenever samples are taken to protect the sampler and to assist in avoidance of contamination.
- Groundwater samples are obtained from the monitoring wells using low flow/micro-purge sampling equipment to reduce the disturbance of the water column and loss of volatiles.
- During pumping to purge the well, the pH, temperature, conductivity, dissolved oxygen, redox potential and groundwater levels are monitored (where possible) using calibrated field instruments to assess the development of steady state conditions. Steady state conditions are generally considered to have been achieved when the difference in the pH measurements was less than 0.2 units and the difference in conductivity was less than 10%.
- All measurements are recorded on specific data sheets.
- Once steady state conditions are considered to have been achieved, groundwater samples are obtained directly from the pump tubing and placed in appropriate glass bottles or plastic bottles.
- All samples are preserved in accordance with water sampling requirements detailed in the NEPM 2013 and placed in an insulated container with ice. Groundwater samples are preserved by immediate storage in an insulated sample container with ice as outlined in the report text.
- Record the sample on the appropriate log in accordance with AS1726:1993. At the end of each water sampling complete a chain of custody form.

QA/QC Definitions

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)[18] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[19]. The NEPM (2013) is consistent with these documents.

A. Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit*" (Keith, 1991).

B. Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;

[18] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)
[19] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{(\text{Spike Sample Result} - \text{Sample Result}) \times 100}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$

Appendix C: Guidelines and Reference Documents

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

Health Infrastructure, (2021). Design Guidance Note No. 030. Site Investigations: Project Opportunities and Constraints

National Health and Medical Research Council (NHMRC), (2021). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

NSW Department of Environment and Conservation, (2007). Guidelines for the Assessment and Management of Groundwater Contamination

NSW EPA, (2014). Waste Classification Guidelines - Part 1: Classifying Waste

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

NSW EPA, (2022). *Sampling design part 1 - application*, Contaminated Land Guidelines

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

Protection of the Environment Operations Act 1997 (NSW)

State Environmental Planning Policy (Resilience and Hazards) 2021 (NSW)

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

Western Australia Department of Health, (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia