REPORT TO

NSW HEALTH INFRASTRUCTURE

ON

DETAILED SITE INVESTIGATION

FOR

PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE DEVELOPMENT

AT

85-91 COWPER STREET, WARRAWONG, NSW

Date: 22 December 2023
Ref: E34300PT2rpt3

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Executive Summary

NSW Health Infrastructure ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed New Warrawong Community Health Centre at 85-91 Cowper Street, Warrawong, NSW ('the site'). The purpose of the investigation is to characterise the site contamination conditions. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

This report has been prepared to support the Review of Environmental Factors (REF) for the proposed Warrawong Community Health Centre development, with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021 (formerly known as SEPP55).

JKE has previously undertaken several phases of investigation at the site and within the wider hospital property. A summary of relevant information from these investigations is included in Section 2.

The project scope for the Warrawong Community Health Centre includes:

- Demolition of existing Building D, Building E, and Building H, along with nearby retaining walls, gazebos and pathways;
- Construction of a new building (part single storey and part two storey) with a gross floor area of around 2,000m^2, to accommodate a number of community health related services;
- Alterations and additions to carparking and access, including expand the south carpark; and
- Ancillary infrastructure and works, including service connections, landscaping, and signage.

There is an existing childcare centre operating in part of the site and it is unclear whether this land use will also form part of the future development/use of the site.

The aim of the DSI is to characterise the soil and groundwater contamination conditions in accessible areas of the site in order to assess site risks in relation to contamination and establish whether remediation is required. The DSI objectives are to:

- Assess the soil and groundwater contamination conditions in accessible areas;
- Assess the potential risks posed by contamination to the receptors identified in the Conceptual Site Model (CSM); and
- Inform the preparation of a Remediation Action Plan (RAP).

The scope of work included the following:

- Review of existing JKE project information;
- Review and update of the CSM;
- Design and implementation of a sampling, analysis and quality plan (SAQP). The SAQP was prepared prior to the commencement of the DSI and is attached in the appendices;
- 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 DSI included a review of existing project information, a site inspection, soil sampling from 24 boreholes and groundwater sampling from five monitoring wells (three new and two existing). The following potential contamination sources were identified at the site: fill material; use of pesticides; hazardous building materials (former and existing buildings and structures); fuel storage onsite (AST); and off-site fuel storage (upgradient former USTs).

The boreholes encountered fill materials to depths of approximately 0.2m below ground level (BGL) to 3mBGL, underlain by silty or clayey residual soils. The fill contained inclusions of igneous, ironstone, and sandstone gravel, latite and igneous cobbles, concrete and brick fragments, clay nodules, ash, slag, bark chips, tree roots, and root fibres. There was no fibre cement fragments/asbestos containing material (FCF/ACM) identified in any of the bulk asbestos quantification field screening samples during the DSI. However, the investigations at the site have identified sporadic occurrences of ACM in/on soil.

Potential health-based risks associated with asbestos in/on fill/soil are considered to be low, however further investigation is required following demolition and further risk assessment is required once this data is available. Ecological risks from fill soil were assessed to be low and acceptable.

JKE is of the opinion that potential risks associated with groundwater at the site are low in the context of the proposed development and are not indicative of site contamination that warrants remediation.

Remediation of the site is not considered to be required based on the current dataset. However, given the identification of asbestos in/on fill/soil at the site, the sampling limitations (i.e. sampling from boreholes instead of test pits), and the spatial data gaps (i.e. sampling not undertaken beneath the buildings and structures), a RAP is recommended for the proposed development so that risks remain low and acceptable. We consider that it would be reasonable to include the requirements for further investigation within the RAP because a large portion of this work will need to occur after demolition. Additional details of the proposed development will also be required to carry out the risk assessment (e.g. details of buildings/structures being retained or demolished, proposed building footprints and finished floor levels, earthworks levels, locations of car parks and landscaped areas etc).

We anticipate that as a minimum the RAP will include a contingency for remediation of asbestos in soil, that will include the removal/off-site disposal of contaminated fill where practicable. In our opinion the scope of remediation will not need to extend to groundwater in the context of rendering the site suitable for the proposed development.

We are of the opinion that the site can be made suitable for the proposed hospital development provided the following recommendations are implemented:

1. Prepare an AMP to manage asbestos in soil risks in the context of the on-going use of the site as a hospital. This AMP will need to remain in force until the redevelopment occurs. Grass coverage across the site appears to currently be in good condition, and it is recommended that the grass coverage is maintained under provisions of the AMP;
2. Given ACM has been identified in the fill/soil and on the site surface, an Licensed Asbestos Assessor (LAA) should be engaged and complete a walkover surface clearance inspection. Upon successful completion of the walkover inspection, a surface clearance certificate should be provided for the site;
3. Preparation and implementation of a RAP. The RAP is to include requirements for a post-demolition investigation(s) to adequately address the data gaps discussed in Section 8.3 of this report and outline a contingency for asbestos in/on fill if found at higher concentrations;
4. Should the post-demolition investigation identify additional contamination that requires remediation outlined in the RAP, an addendum RAP/Remedial work Plan (RWP) must be prepared and implemented;
5. Preparation and implementation of a construction-phase AMP; and
6. Preparation of a validation assessment report for the remediation works undertaken at the site.

If not already undertaken, a Hazardous Building Materials Assessment (HAZMAT) must be undertaken for the existing buildings/structures at the site prior to the commencement of demolition work.

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

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

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Abbreviations

Asbestos Fines/Fibrous Asbestos	**AF/FA**
Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Australian Height Datum	**AHD**
Acid Sulfate Soil	**ASS**
Above-Ground Storage Tank	**AST**
Before You Dig Australia	**BYDA**
Below Ground Level	**BGL**
Benzo(a)pyrene Toxicity Equivalent Factor	**BaP TEQ**
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**
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**
Health Investigation Level	**HILs**
Health Screening Level	**HSL**
Health Screening Level-Site Specific Assessment	**HSL-SSA**
International Organisation of Standardisation	**ISO**
JK Environments	**JKE**
JK Geotechnics	**JKG**
Licensed Asbestos Assessor	**LAA**
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**
Polychlorinated Biphenyls	**PCBs**
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**
Review of Environmental Factors	**REF**
Relative Percentage Difference	**RPD**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
State Environmental Planning Policy	**SEPP**

Site Specific Assessment	**SSA**
Source, Pathway, Receptor	**SPR**
Standard Penetration Test	**SPT**
Standing Water Level	**SWL**
Trip Blank	**TB**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
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	**%**
Percentage weight for weight	**%w/w**

1 INTRODUCTION

NSW Health Infrastructure ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed New Warrawong Community Health Centre at 85-91 Cowper Street, Warrawong, NSW ('the site'). The purpose of the investigation is to characterise the site contamination conditions. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

This report has been prepared to support the Review of Environmental Factors (REF) for the proposed Warrawong Community Health Centre development, with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021[1] (formerly known as SEPP55).

JKE has previously undertaken several phases of investigation at the site and within the wider hospital property. A summary of relevant information from these investigations is included in Section 2.

1.1 Proposed Development Details

The project scope for the Warrawong Community Health Centre includes:

- Demolition of existing Building D, Building E, and Building H, along with nearby retaining walls, gazebos and pathways;
- Construction of a new building (part single storey and part two storey) with a gross floor area of around 2,000m2, to accommodate a number of community health related services;
- Alterations and additions to carparking and access, including expand the south carpark; and
- Ancillary infrastructure and works, including service connections, landscaping, and signage.

There is an existing childcare centre operating in part of the site and it is unclear whether this land use will also form part of the future development/use of the site.

1.2 Aim and Objectives

The aim of the DSI is to characterise the soil and groundwater contamination conditions in accessible areas of the site in order to assess site risks in relation to contamination and establish whether remediation is required.

The DSI objectives are to:

- Assess the soil and groundwater contamination conditions in accessible areas;
- Assess the potential risks posed by contamination to the receptors identified in the Conceptual Site Model (CSM); and
- Inform the preparation of a Remediation Action Plan (RAP).

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

1.3 Scope of Work

The investigation was undertaken generally in accordance with a JKE proposal (Ref: EP58856PTrev1) of 28 June 2023 and written acceptance from Savills acting on behalf of the client of 3 July 2023. The scope of work included the following:

- Review of existing JKE project information;
- Review and update of the CSM;
- Design and implementation of a sampling, analysis and quality plan (SAQP). The SAQP was prepared prior to the commencement of the DSI and is attached in the appendices;
- 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)[2], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[3] and SEPP Resilience and Hazards 2021. A list of reference documents/guidelines is included in the appendices.

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

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

2 SITE INFORMATION

2.1 Previous JKE Investigations

JKE has undertaken several phases of investigation on the wider hospital property, including at the site. Relevant information is summarised in the table below:

Table 2-1: Summary of Previous Investigations and Relevant Findings

Investigation phase	Relevant findings to the site
PSI, JKE 2022[4]	JKE previously undertook a PSI across the site and southern portion of the wider section of the hospital property in 2022. The PSI 2022 included a review of site history information, a site inspection, soil sampling from 37 boreholes and groundwater sampling from three monitoring wells. Of these locations, 28 boreholes and two monitoring wells were located within the site. The following areas of environmental concern (AEC) were identified and are applicable to the site: fill material; use of pesticides; hazardous building materials in former and existing buildings; one above ground storage tank (AST) on site; and fuel storage just south/south-west of the site boundary, including two underground storge tanks (USTs)(see Figure 2). The USTs were understood to have been previously abandoned in-situ. The boreholes on the site encountered fill materials (i.e. historically imported/placed soils) to depths of approximately 0.3m below ground level (BGL) to 2.6mBGL, underlain by clayey residual soils and/or latite bedrock. The fill contained inclusions of igneous, ironstone, sandstone and siltstone gravel, shale fragments, slag, concrete, brick and metal fragments, coal, ash, and root fibres. There were no fibre cement fragments (FCF)/ asbestos containing materials (ACM) identified in any of the bulk asbestos quantification field screening samples. One surficial FCF was encountered on the site surface during the site inspection, however this was found not to contain asbestos. Asbestos as ACM was detected in one soil sample on the site (from BH12) at a concentration above the health screening level (HSL) site assessment criteria (SAC). Total recoverable hydrocarbons (TRH) were encountered in groundwater from both monitoring wells on the site at concentrations greater than the site specific assessment criterion. The TRH detections were considered likely to be associated with a medium-heavy fuel source such as diesel or kerosene. Copper and zinc were reported above the ecological SAC in groundwater. The PSI 2022 recommended an asbestos management plan (AMP) be prepared and implemented for the current land use/operations, in addition to further investigation via a DSI. The PSI also recommended the following: 1. Prepare a SAQP for the DSI; 2. Undertake a DSI in accordance with the SAQP; and 3. Develop and implement a RAP based on the combined findings of the PSI and DSI. Any requirements documented in a RAP are to be implemented and the site is to be remediated and validated.
PSI, JKE 2023[5]	JKE previously undertook a PSI across the western portion of the wider section of the hospital property in 2023. The PSI 2023 included a review of site history information, a site inspection, soil sampling from 15 boreholes and two monitoring wells across the western portion of the wider hospital property. The following AEC were identified: fill material; use of pesticides; hazardous building materials in former and existing buildings; and fuel storage in a down-gradient section of the wider hospital property (this is the same fuel storage as noted above for the PSI 2022).

[4] JKE, (2022). *Report to Health Infrastructure on Preliminary Site Investigation for Proposed New Warrawong Community Health Centre Development at 85-91 Cowper Street, Warrawong, NSW.* (Ref: E34300PT2rpt DRAFT, dated 10 November 2022) (referred to as PSI 2022)
[5] JKE, (2023a). *Report to Health Infrastructure on Preliminary Site Investigation for Proposed New Warrawong Community Health Centre Development at 85-91 Cowper Street, Warrawong, NSW.* (Ref: E34300PT2rpt2 DRAFT, dated 20 March 2023) (referred to as PSI 2023)

Investigation phase	Relevant findings to the site
	None of the PSI 2023 boreholes were positioned on the site. The boreholes encountered fill materials to depths of approximately 0.2mBGL to 4.5mBGL, underlain by clayey residual soils and/or latite bedrock. The fill contained inclusions of igneous, ironstone, sandstone and siltstone gravel, shale fragments, slag, concrete, brick and metal fragments, coal, ash, and root fibres. There was no FCF/ACM identified in any of the bulk asbestos quantification field screening samples. Asbestos (as asbestos fines/fibrous asbestos - AF/FA) was detected in surface fill/soil at one location, and in deeper fill at two other locations. All asbestos concentrations were below the SAC. Copper and zinc were reported above the ecological SAC in fill/soil, and in groundwater, copper and zinc were reported above the ecological SAC. As a duty of care, and to meet the requirements under Clause 429 of the Work Health and Safety Regulation (2017), an AMP (for asbestos in/on soil) was recommended to be prepared and implemented for the current land use/operations at the hospital property, in addition to further investigation via a DSI.

An SAQP[6] and investigation AMP[7] (attached in the appendices) were prepared for the DSI.

2.2 Site Identification

Table 2-2: Site Identification

Current Site Owner (certificate of title):	Health Administration Board
Site Address:	85-91 Cowper Street, Warrawong, NSW
Lot & Deposited Plan:	Lots 21 to 29 & Lots 50 to 53 in DP23670 and part of Lots 36 to 41 and 49 in DP23670
Current Land Use:	Hospital
Proposed Land Use:	Continued use as a hospital/community health centre
Local Government Authority:	Wollongong City Council
Current Zoning:	R2: Low density residential
Site Area (m^2) (approx.):	11,560
RL (AHD in m) (approx.):	21-30
Geographical Location (decimal degrees) (approx.):	Latitude: -34.4863511 Longitude: 150.8790082

[6] JKE, (2023b). *Report to Health Infrastructure on Sampling Analysis and Quality Plan for Proposed New Warrawong Community Health Centre Development at 85-91 Cowper Street, Warrawong, NSW.* (Ref: E34300PT-SAQP, dated 26 July 2023) (referred to as SAQP)

[7] JKE, (2023c). *Report to Health Infrastructure on Asbestos Management Plan for Proposed New Warrawong Community Health Centre Development at 85-91 Cowper Street, Warrawong, NSW.* (Ref: E34300PT2rpt-AMP, dated 26 July 2023) (referred to as AMP)

2.3 Site Description

The site is located in the eastern half of the existing Port Kembla Hospital, in a predominantly residential area of Warrawong, and is bound by Cowper Street to the north and Fairfax Road to the east. The site is located approximately 400m to the north-west of Kully Bay (on Lake Illawarra).

The regional topography is characterised by a south-east facing hillside that falls towards Kully Bay. The site is located mid slope, locally sloping to the south-east at approximately 10° to 15°. Parts of the site appear to have been levelled to account for the slope and accommodate the existing development.

JKE undertook a site walkover as part of the DSI on 17 August 2023. Key observations are summarised below:

- The site and wider hospital property was occupied by Port Kembla District Hospital and included buildings, car parks and internal access roads and footpaths as well as landscaped/garden areas;
- On site there were three interconnected buildings of one to three storeys. A childcare centre was located on the western side (ground floor) of the main site building and included a fenced off play area (generally grass covered with some paved pathways). The buildings were of an age indicative of housing hazardous building materials (i.e. asbestos and lead containing paint);
- On the north-east side of the main building was an asphaltic concrete car park and access driveway which led to Cowper Street in the centre of the northern boundary and to the south of the main building was a gravel covered car park access via the one way driveway through the site from south to east;
- The site was entirely unfenced. Surface scouring observed at the site indicated minimal erosion and appeared to be due to surface water and wash away of surface soils at the interface between paved and unpaved sections of the site;
- A 1,000L AST containing diesel was observed in the south-west of the site (refer to Figure 2). No odours or staining on the surrounding ground surface were noted in the vicinity of the AST during the inspection;
- On the wider hospital property to the west of the site boundary and west of the AST, the area where the abandoned USTs were inferred to be located was observed to comprise a section of asphaltic paved car park and no odours or staining on the surrounding ground surface were noted in this area during the inspection;
- Fill material (igneous gravels, concrete fragments, etc.) was observed at the site surface in areas of scouring indicating that some filling had likely occurred at the site for levelling purposes. In the east of the site, a narrow grass covered soil bund (approximately 0.5m in height) extended in a north-south direction;
- Surface water flows would be expected to flow to the east in keeping with the localised fall of the site. Excess surface water would either be expected to infiltrate the unpaved areas or into the stormwater pits observed across the site. These pits would be expected to discharge into the local stormwater system; and
- Outside of building footprints, carparks and paved areas the site was generally grass covered, with a number of medium to large trees in the south and north-east section of the site. No obvious signs of vegetation stress or dieback were observed.

2.4 Surrounding Land Use

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

- North – Residential properties beyond Cowper Street;
- South – The wider hospital property and residential properties beyond Fairfax Road;
- East – Residential properties beyond Fairfax Road;
- West – The wider hospital property, including USTs to the west.

JKE is of the opinion that the USTs located on the wider hospital property to the west of the site may be a potential off-site contamination source due to the proximity of the tanks. We also note that TRH was detected in the onsite groundwater samples (MW4 and MW5) collected for the PSI 2022, though the source of these impacts was uncertain.

2.5 Underground Services

The 'Before You Dig Australia' (BYDA) plans were reviewed for the investigation in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration. Major services were not identified that would be expected to act as preferential pathways for contamination migration. Local underground services (i.e. those note shown on the BYDA plans) are expected to exist within the hospital and these may require further consideration depending on the findings of the DSI and assessment of any applicable fate and transport mechanisms for contamination.

2.6 Summary of Site History Information

A time line summary of the historical land uses and activities is presented in the table below. 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 Desktop.

Table 2-3: Summary of Historical Land Uses/Activities

Year(s)	Potential Land Use/Activities
1926-1961	On-site: • Vacant land. Surrounding Area: • Predominantly vacant initially; and • Ongoing development for residential use
1961-onwards	On-site: • Ongoing development of site for hospital including construction of buildings, pathways and vehicle access (driveways and car parks); • Demolition of building in south of site circa 2012 to 2016 (where existing gravel covered car park exists); • Some filling of the site may have occurred for levelling purposes and around services; • Use of pesticides beneath buildings and around site; • Use of AST for diesel storage; and • Hazardous building materials (i.e. asbestos and lead in paint) may have been used in former and/or existing structures.

Year(s)	Potential Land Use/Activities
	Surrounding Area: • Ongoing development of surrounding area for residential and hospital property; • Hazardous building materials (i.e. asbestos and lead in paint) may have been used in former and existing structures. A building was demolished to the south of the site (existing car park location) between 2012 and 2016; • Installation of USTs on wider hospital property; and • Installation/abandonment of petrol USTs and infrastructure. The tanks were reportedly abandoned circa 2003.

3 SUMMARY OF GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology and Soil Landscapes

Regional geological information reviewed for the previous investigations indicated that the site is underlain by Dapto Latite Member, which typically consists of Mafic basaltic-textured latite, aphanitic to porphyritic with crystalline groundmass, vesicles mostly as elongated stringers parallel to flow, sporadically infilled with carbonate, and sporadic columnar jointing.

A summary of the subsurface conditions encountered during the PSI 2022 (which includes some boreholes located to the south of the site) is presented in the following table:

Table 3-1: Summary of Subsurface Conditions

Profile	Description
Fill	Fill was encountered at the surface or directly beneath the pavement in all boreholes and extended to depths of approximately 0.2mBGL to 2.6mBGL. Boreholes BH1, BH2, BH3, BH12, BH13, BH14, BH31, and BH33, were terminated in the fill at a maximum depth of approximately 1.6mBGL. The borehole logs recorded this as being 'refusal on obstruction in fill', however, it is possible that the refusal occurred at the base of the fill, on-top of the underlying bedrock. The fill typically comprised silty clay, sandy gravel, silty sandy clay and gravel with inclusions of igneous, ironstone, sandstone and latite gravel, sand, concrete, asphaltic concrete, terracotta, brick, plastic and metal fragments, geofabric, slag, ash, roots and root fibres. No odours or staining were recorded in the fill material during field work. FCF was encountered on the surface at BH26, though this was later analysed and was not found to contain asbestos. No FCF/ACM was encountered in the fill material during fieldwork.
Natural Soil	Natural silty sandy clay and silty clay residual soils were encountered beneath the fill material in boreholes BH15 to BH19, and extended to depths of approximately 0.4mBGL to 2.4mBGL. Neither odours nor staining were recorded in the natural soil during fieldwork.
Bedrock	Latite bedrock was encountered beneath the fill material or natural soils in boreholes BH4, BH5 and BH11 at depths of approximately 0.4mBGL to 2.6mBGL Neither odours nor staining were recorded in the bedrock during fieldwork.
Groundwater	All boreholes remained dry during and on completion of drilling.

3.2 Acid Sulfate Soil (ASS) Risk and Planning

The site is not located in an ASS risk area according to the risk maps prepared by the Department of Land and Water Conservation.

ASS information presented in the Lotsearch report indicated that the site is located within a Class 5 ASS risk area. Works in a Class 5 risk area that could pose an environmental risk in terms of ASS include works within 500m of adjacent Class 1,2,3,4 land which are likely to lower the water table below 1m AHD on the adjacent Class 1,2,3,4 land.

JKE note that the site is located at an elevation of approximately 21-30m AHD and residual soils were observed during the fieldwork conducted for the PSI 2022. ASS is not usually associated with soil horizons above 5mAHD or residual soil profiles. Based on the available information, it is unlikely that ASS would be disturbed as part of the proposed development, or that the proposed development will likely lower the water table below 1mAHD on adjacent Class 1, 2, 3, or 4 land. An ASS management plan is not considered to be required.

3.3 Hydrogeology

Hydrogeological information presented in the PSI 2022 indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes fractured or fissured, extensive aquifers of low to moderate productivity. There was a total of 74 registered bores within the search buffer of 1,000m. In summary:

- The nearest registered bore was located approximately 1,105m to the north-east of the site. This was utilised for monitoring purposes;
- The majority of the bores were registered for monitoring purposes;
- There were no nearby bores (i.e. within 1km) registered for domestic, water supply or irrigation uses; and
- The drillers log information from the closest registered bores typically identified fill and/or clay soil to depths of 12m-14m, underlain by sandstone and shale bedrock. Standing water levels (SWLs) in the bores ranged from 1.2mBGL to 12mBGL.

Table 3-2: Summary of Field Screening

Aspect	Details
Groundwater Depth & Flow	SWLs measured in the monitoring wells installed at the site ranged from 1.17mBGL to 7mBGL. Groundwater RLs calculated on these measurements ranged from 25.41mAHD to 27.32mAHD. Groundwater flow was inferred to be towards the south-east.
Groundwater Field Parameters	Field measurements recorded during sampling were as follows: - pH ranged from 7.06 to 7.86; - EC ranged from 568µS/cm to 846µS/cm; - Eh ranged from 22.4mV to 24.1mV; and - DO was 0.7mg/L in both wells.
LNAPLs petroleum hydrocarbons	Phase separated product (i.e. LNAPL) were not detected using the interphase probe during groundwater sampling.

3.4 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Kully Bay (on Lake Illawarra) located approximately 400m to the south-east of the site. The bay is considered to support a marine ecosystem and is down-gradient from the site.

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. An iteration of the CSM for the site is presented in the following table and is based on the site information (including the site inspection information), the review of site history information and previous investigation findings).

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/or could have been placed during earthworks using site-won material from within the wider hospital. ACM was identified in fill/surficial soil during the PSI 2022 at one location (BH12 in the western section of the site).	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), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.
Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site for typical pest control applications.	Heavy metals and OCPs.
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities onsite, or on the wider hospital property. These materials may also be present in the existing buildings/structures on site. Bonded ACM was identified in surficial soil as noted above. This may be associated with historical demolition on site.	Asbestos, lead and PCBs.
Fuel storage – An AST (diesel) is positioned on the western boundary of the south of the site (see Figure 2).	Heavy metals, TRH, BTEX and PAHs.
Offsite - Fuel storage on Wider Hospital Property – At least two USTs were identified in the SafeWork NSW search results on the wider hospital property, to the west/south-west of the site (see Figure 2). Records indicated that the USTs were used to store petrol.	Lead, TRH, BTEX and PAHs.

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	Potential mechanisms for contamination include: • Fill material – importation of impacted material, 'top-down' impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material); • Use of pesticides – 'top-down' and spills (e.g. during normal use, application and/or improper storage); • Hazardous building materials – 'top-down' (e.g. demolition resulting in surficial impacts in unpaved areas); • Fuel storage – 'top-down', spills (e.g. during filling of the AST); and • Off-site (fuel storage on wider hospital property) – 'top-down', spills (e.g. during filling of the tanks and/or dispensing activities), or sub-surface release (e.g. from leaking tank or pipework).
Affected media	Soil and groundwater have been identified as potentially affected media. The potential for soil vapour impacts will initially be assessed via the soil and groundwater results. Soil vapour sampling is outside the scope of the DSI.
Receptor identification	Human receptors include site occupants/users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users and recreational water users in the down-gradient water body (Kully Bay). Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas), and marine ecology in Kully Bay. Kully Bay supports a marine ecosystem and is also utilised for recreational purposes.
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). The potential for exposure would typically be associated with the current uses, proposed construction and excavation works, and future use of the site. Potential exposure pathways for ecological receptors include primary 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 pathways to groundwater (for human receptors) would be via vapour intrusion, or potential contact with groundwater entering the bay. Exposure to ecological receptors could also occur in the bay.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the existing or proposed buildings (either from soil contamination or volatilisation of contaminants from groundwater); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and • Migration of groundwater off-site and into nearby water bodies, including aquatic ecosystems and those being used for recreation.

Presence of preferential pathways for contaminant movement	None identified.

5 SUMMARY SAMPLING, ANALYSIS AND QUALITY PLAN

JKE prepared a stand-alone SAQP for the DSI which is attached in Appendix G. The SAQP is 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;
- Soil samples were obtained from 24 boreholes (BH201 to BH224) generally spread across the site in accessible areas outside the building footprints, as shown on the attached Figure 2 in Appendix A;
- Soil samples were obtained using a combination of hand auger, drill rig equipped with spiral flight augers (150mm diameter), and a mechanical excavator with 300mm pendulum auger attachment between 31 July and 14 August 2023;
- Three additional monitoring wells were installed in BH204 (MW204), BH223 (MW223), and BH224 (MW224) during the DSI, as shown on Figure 2 in Appendix A. The wells were generally positioned to provide site coverage (MW204) and target the AST in the west and redundant off-site USTs to the west (MW223 and MW224);
- The monitoring well construction details are documented on the borehole log for BH204, BH223 and BH224 attached in the appendices;
- New monitoring well MW204 and the two existing monitoring wells, MW4 and MW5, were developed on 31 July 2023. New monitoring well MW223 was developed on 14 August 2023 and new monitoring well MW224 was developed on 15 August 2023. With the exception of MW5, all wells were developed (i.e. water was pumped out) until they were effectively dry using a submersible electrical pump. MW5 was developed until steady state conditions were achieved;
- The monitoring wells were allowed to recharge for between two to 17 days after development. Groundwater samples were obtained on 17 August 2023. Steady state conditions were achieved in MW5 during sampling, however, due to slow but continual drawdown of the SWLs during groundwater sampling in the other monitoring wells (MW4, MW204, MW223 and MW224), steady state was not achieved;
- The field monitoring records and calibration data are attached in the appendices; and
- The relative heights for all monitoring wells were surveyed using a GPS unit on 30 August 2023. SWLs for all wells were also measured on 30 August 2023. This information is documented in results Section 7.

5.1 Deviations to the SAQP

The following deviations to the SAQP are noted:

- Following commencement of the fieldwork for the DSI, the client's representative indicated that roadworks were also proposed further south of the area initially nominated as 'the site' within the SAQP. Consequently, the site area for the DSI was extended to capture the extent of the proposed works (the updated site area is reflected on the Figures in Appendix A of this DSI report);
- Based on the extended site area, the AST which was discussed as being 'off-site' in the SAQP, became an onsite AEC. The off-site USTs were also considered to be in an 'up-gradient' position of the southern portion of the site;
- Four additional sampling locations were proposed (BH221 to BH224) in the southern part of the site, including two additional monitoring wells (MW223 and MW224);

- Groundwater samples were analysed for a broader suite of VOCs, in addition to the CoPC listed for the AST and UST AEC;
- The fill was not penetrated in BH201, BH205 to BH207, BH209 to BH215, BH217 to BH221 and BH222 due to limitations associated with the use of hand equipment and/or obstructions in fill;
- The sample volumes for asbestos bulk quantification/field screening for a limited number of samples was below 10L. The low volume was due to the use of augers which limited the sample return particularly in subsurface fill profiles;
- The asbestos field screening intervals extended across fill profiles and for one sample was collected for an interval of greater than 1m. The cross-profile screening and larger interval collection was due to the use of augers which limited the sample return particularly in the subsurface soil profiles; and
- Due to a scheduling error, only one inter laboratory sample was analysed for soil. No inter-laboratory groundwater sample was analysed.

Please refer to the SAQP attached in the appendices for further information.

5.1.1 Laboratory Analysis

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)	329661, 330588, and 330763
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	39136

5.1.2 Asbestos Fibre Air Monitoring

Asbestos fibre air monitoring was undertaken by others in accordance with the AMP prepared for the DSI. The air monitoring results are summarised in results Section 7.6.

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, including childcare land use' exposure scenario (HIL-A). These criteria have been adopted to make a preliminary assessment of risks to the most sensitive receptors (i.e. children) and are also suitably protective of adults in a commercial land use scenario such as a hospital. In our opinion, the other generic land-use types in NEPM (2013) are less appropriate for a hospital land use scenario where there are relatively large unpaved/grassed/landscape areas. The land use Type A criteria also account for uncertainty around whether childcare centre land use will occur under the proposed development scenario;
- 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)[8]; and
- Asbestos was assessed on the basis of presence/absence and against the HSL-A criteria. 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 were adopted for the assessment of asbestos in soil. The SAC adopted for asbestos were derived from the NEPM 2013 and are 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): $$\textbf{\% w/w asbestos in soil} = \frac{\textbf{\% asbestos content x bonded ACM (kg)}}{\text{Soil volume (L) x soil density (kg/L)}}$$

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

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 been 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[10];
- ESLs were adopted based on the soil type; and
- EILs for selected metals were calculated using averaged site-specific soil parameters for pH, cation exchange capacity (CEC) and clay content in fine grained fill material and in fine grained natural soil. These data have been tabulated below for reference and were used to select the added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013) to sum with the published ambient background concentration (ABC) presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)[11]. This method is considered to be adequate for the Tier 1 screening.

Table 6-2: Site Specific Soil Parameters – Fine Grained Fill material

Location	Depth	Material type	pH	CEC	Clay content
BH201	0-0.2	Fill: silty clay	9.2	40	17
BH201	0-0.2	Laboratory duplicate	9.4	41	NA
BH210	1-1.3	Fill: gravelly clay	8.6	32	15
BH216	0-0.2	Fill: silty sandy clay	7.4	27	46
		Adopted Soil Parameter Value	**8.65**	**35**	**26**

Table 6-3: Site Specific Soil Parameters – Fine Grained Natural Soil

Location	Depth	Material type	pH	CEC	Clay content
BH202	1-1.2	Silty sandy clay	7.2	33	NA
BH208	0.7-1	Silty sandy clay	7.5	29	NA
BH216	1.1-1.3	Silty sandy clay	7.5	21	NA
		Adopted Soil Parameter Value	**7.4**	**27.67**	NA

[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.

6.1.3 Management Limits for Petroleum Hydrocarbons

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

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)[12]. Environmental values for this investigation include aquatic ecosystems, human uses (i.e. primary and secondary contact associated with recreational water use in down-gradient water bodies) and human-health risks in non-use scenarios (i.e. exposure to volatile contaminants above groundwater contamination plumes).

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. These SAC are applicable for on-grade buildings where groundwater and bedrock are deeper than 2mBGL;
- Groundwater was recorded at depths of less than 2mBGL in MW5 and MW204. The HSLs are not applicable for groundwater shallower than 2m, (or for situations where basements intersect groundwater). We have therefore adopted alternative 'site-specific' assessment (SSA) criteria for the Tier 1 screening of human health risks posed by volatile contaminants in groundwater. The assessment included selection of alternative Tier 1 criteria that were considered suitably protective of human health. These criteria are based on drinking water guidelines and have been referred to as HSL-SSA. The criteria were based on the following (as shown in the attached report tables):
    - Australian Drinking Water Guidelines 2011 (updated 2021)[13] for BTEX compounds and selected VOCs;
    - World Health Organisation (WHO) document titled Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality (2008)[14] for petroleum hydrocarbons;
    - USEPA Region 9 screening levels for naphthalene (threshold value for tap water); and
    - The use of the laboratory PQLs for other contaminants where there were no Australian guidelines.
- The ADWG 2011 were multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. within down-gradient water bodies). These have been deemed as 'recreational' SAC.

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

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

[14] World Health Organisation (WHO), (2008). *Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality* (referred to as WHO 2008)

6.2.2 Environment (Ecological - aquatic ecosystems)

Groundwater Investigation Levels (GILs) for 95% protection of marine species were 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 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.

[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)

7 RESULTS

7.1 Summary of Data (QA/QC) Evaluation

The data evaluation is presented in the appendices. In 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.

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 logs attached in the appendices for further details.

Table 7-1: Summary of Subsurface Conditions

Profile	Description
Pavement	Asphaltic Concrete (AC) pavement was encountered at the surface in boreholes BH208, BH210, BH217, and BH224 and was approximately 100mm in thickness.
Fill	Fill was encountered at the surface or directly beneath the pavement in all boreholes and extended to depths of approximately 0.2mBGL to 3mBGL. Boreholes BH201, BH205, BH206, BH207, BH209 to BH215, and BH217 to BH222 were terminated in the fill at a maximum depth of approximately 2.7mBGL. A number of logs recorded this as being 'refusal on gravels' or 'obstruction in fill', however a number of boreholes terminated in the fill were recorded as being terminated at the base of the fill, on-top of the underlying bedrock. The fill typically comprised sandy silty clay, silty clay, silty sandy clay, clayey sand, sandy gravel and gravelly clay with inclusions of igneous, ironstone, and sandstone gravel, latite and igneous cobbles, concrete and brick fragments, clay nodules, ash, slag, bark chips, tree roots, and root fibres. No odours or staining were recorded in the fill material during field work. No FCF/ACM was encountered in the fill material during fieldwork.
Natural Soil	Natural silty sandy clay, silty clay, residual soils were encountered beneath the fill material in boreholes BH202, BH203, BH208, BH216, BH223 and BH224 and extended to depths of approximately 1.1mBGL to 4.2mBGL. Neither odours nor staining were recorded in the natural soil during fieldwork.
Bedrock	Latite bedrock was encountered beneath the fill material or natural soils in boreholes BH204, BH223 and BH224 at depths of approximately 1.8mBGL to 4.2mBGL. Neither odours nor staining were recorded in the bedrock during fieldwork.
Groundwater	Groundwater seepage was not encountered during drilling. All boreholes remained dry on completion of and a short time after drilling.

7.3 Field Screening

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

Table 7-2: Summary of Field Screening

<table>
<tr><th>Aspect</th><th>Details</th></tr>
<tr><td>PID Screening of Soil Samples for VOCs</td><td>PID soil sample headspace readings are presented in attached report tables and the COC documents attached in the appendices. The results ranged from 0ppm to 3.3ppm equivalent isobutylene. These results indicate a lack of significant PID detectable VOCs in the samples.</td></tr>
<tr><td>Bulk Screening for Asbestos</td><td>The bulk field screening results are summarised in the attached report Table S5. FCF/ACM was not encountered in any of the bulk screening samples during the DSI. All results were below the SAC.</td></tr>
<tr><td>Groundwater Depth & Flow</td><td>SWLs measured in the monitoring wells installed at the site ranged from 1.1mBGL to 6.56mBGL during development and sampling. Survey levels and groundwater RLs measured in the wells on 30 August 2023 are presented in the table below:
<table>
<tr><th>MW reference</th><th>Reduced Level (mAHD)</th><th>SWL
(30 August 2023)</th><th>SWL (mAHD)</th></tr>
<tr><td>MW4</td><td>26.853</td><td>1.67</td><td>25.183</td></tr>
<tr><td>MW5</td><td>28.48</td><td>2.47</td><td>26.01</td></tr>
<tr><td>MW204</td><td>38.172</td><td>2.2</td><td>35.972</td></tr>
<tr><td>MW223</td><td>28.972</td><td>6.42</td><td>22.552</td></tr>
<tr><td>MW224</td><td>28.452</td><td>6.71</td><td>21.742</td></tr>
</table>
A contour plot was prepared for the groundwater levels as shown on Figure 4. Groundwater flow generally occurs in a down gradient direction perpendicular to the groundwater elevation contours. The contour plot indicates that groundwater generally flows towards the east. The contour plot indicates that groundwater generally flows towards the east and south-east which is broadly consistent with expectations based on the topography.</td></tr>
<tr><td>Groundwater Field Parameters</td><td>Field measurements recorded during sampling were as follows:
- pH ranged from 6.01 to 7.95;
- EC ranged from 305.7µS/cm to 1,333µS/cm;
- Eh ranged from -223.7mV to -148.8mV; and
- DO ranged from 0.8mg/L to 7.5mg/L.

The PID readings in the monitoring well headspace recorded during sampling ranged from 0.1ppm in MW4 and MW5, to 1.1ppm in MW224.</td></tr>
<tr><td>LNAPLs petroleum hydrocarbons</td><td>Phase separated product (i.e. LNAPL) was not detected using the interphase probe during groundwater sampling.</td></tr>
</table>

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 and we note that the data from the PSI 2022 are also included in the tables for completeness. A summary of the DSI 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	41	12	0	0	-
Cadmium	41	1	0	NSL	-
Chromium (total)	41	35	0	0	-
Copper	41	140	0	0	-
Lead	41	44	0	0	-
Mercury	41	0.2	0	NSL	-
Nickel	41	19	0	0	-
Zinc	41	180	0	0	-
Total PAHs	41	1.9	0	NSL	-
Benzo(a)pyrene	41	0.05	NSL	0	-
Carcinogenic PAHs (as BaP TEQ)	41	<0.5	0	NSL	-
Naphthalene	41	<1	0	NSL	-
DDT+DDE+DDD	14	<0.1	0	NSL	-
DDT	14	<0.1	NSL	0	-
Aldrin and dieldrin	14	<0.1	0	NSL	-
Chlordane	14	<0.1	0	NSL	-
Heptachlor	14	<0.1	0	NSL	-
Chlorpyrifos (OPP)	14	<0.1	0	NSL	-
PCBs	14	<0.1	0	NSL	-

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
TRH F1	41	<25	0	0	-
TRH F2	41	<50	0	0	-
TRH F3	41	110	0	0	-
TRH F4	41	<100	0	0	-
Benzene	41	<0.2	0	0	-
Toluene	41	<0.5	0	0	-
Ethylbenzene	41	<1	0	0	-
Xylenes	41	<1	0	0	-
Asbestos (in soil) (%w/w)	24	<0.01 ACM <0.001 AF/FA	0	NA	Asbestos was not detected in any of the soil samples analysed during the DSI.
Asbestos in fibre cement	1	Asbestos detected	1	NSL	Asbestos was detected in the material sample analysed (FCF-201 surface)

Notes:

N: Total number (primary samples)

NSL: No set limit

NL: Not limiting

7.5 Groundwater Laboratory Results

The groundwater laboratory results were assessed against the SAC presented in Section 6.2. Individual SAC are shown in the report tables attached in the appendices and we note that the data from the PSI 2022 are also included in the tables for completeness. A summary of the results is presented below:

Table 7-4: 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	1	0	0	-
Cadmium	5	<0.1	0	0	-
Chromium (total)	5	<1	0	0	-
Copper	5	10	0	4	The copper concentrations of between 3µg/L and 10µg/L in MW4, MW204, MW223 and MW224 and field duplicates (GWDUP201 and GWDUP202), exceeded the ecological SAC of 1.3µg/L.

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Lead	5	<1	0	0	-
Mercury	5	<0.05	0	0	-
Nickel	5	1	0	0	-
Zinc	5	9	0	0	-
Total PAHs Fluoranthene Pyrene	5	0.2 0.1 0.1	0 NSL NSL	0 0 NSL	-
Benzo(a)pyrene	5	<0.1	0	0	-
Naphthalene	5	<0.2	0	0	-
TRH F1	5	51/<100	0	NSL	-
TRH F2	5	<50	0	NSL	-
TRH F3	5	<100	NSL	NSL	-
TRH F4	5	<100	NSL	NSL	-
Benzene	5	<1/<10	0	0	-
Toluene	5	<1/<10	0	0	-
Ethylbenzene	5	<1/<10	0	0	-
m+p-Xylene	5	<2/<20	0	0	-
o-Xylene	5	<1/<10	0	0	-
Total Xylenes	5	<2/<20	0	0	-
VOCs Chloroform Bromodichloromethane	5	 22 4	 0 0	 0 NSL	-
pH	5	8.5	0	1	The pH of the groundwater in MW4 (pH 6.7) was outside the ecological range of 7 to 8.5.
EC	5	1200	NSL	NSL	-

Notes:

^: Primary samples

N: Total number

NSL: No set limit

NL: Not limiting

7.6 Air Monitoring Results - Summary

The air monitoring results are attached in Appendix D. In summary, all of the concentrations for the monitoring events were <0.01 fibres/mL of air.

8 DISCUSSION

8.1 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.

8.1.1 Soil

8.1.1.1 Human Health Risk

Asbestos as ACM was detected in a surficial FCF in the southern area of the site (refer to Figure 3). The fragment could not be broken by hand pressure and was therefore considered to be in the bonded form. The source of the asbestos is considered likely to be associated with either imported fill material which was encountered to varying depths across the site and/or from historical demolition activities in this area of the site. Reference should also be made to Section 8.1.1.4 below.

FCF/ACM was not encountered in the fill material screened using the field quantification methods during the DSI field work and no asbestos was detected in any of the soil samples analysed for the DSI. However, we note that sampling was not undertaken beneath existing buildings and structures due to access limitations, and the use of boreholes for sampling (as a consequence of the site being an active hospital) may also result in the occurrence of asbestos as ACM being underreported. Further investigation will be required to assess the potential impact of asbestos in/on fill at the site following demolition of the existing buildings/structures and for waste classification purposes.

It is our opinion that ACM in/on fill/soil poses a relatively low risk in the current site configuration and whilst the fill is not disturbed as there is a low potential for airborne asbestos fibres to be generated and for the SPR-linkage to become complete. In regards to the proposed development, asbestos in/on fill/soil will require management in regards to occupational exposure during the development works.

As a duty of care, and to meet the requirements under Clause 429 of the Work Health and Safety Regulation (2017), an AMP (for asbestos in/on soil) must be prepared and implemented to manage the site until development occurs.

8.1.1.2 Ecological Risk

All results were below the adopted ecological SAC.

8.1.1.3 Other CoPC

Elevated concentrations of the remaining CoPC were below the adopted SAC in the soil samples analysed during the investigation.

8.1.1.4 Consideration of PSI Soil Data

Asbestos as ACM was detected in fill/soil at a concentration above the SAC in one location (BH12) during the PSI (refer to Figure 3). All other soil results were below the SAC for the PSI sample locations within the site.

It is noted that the ACM concentration reported above the SAC in BH12 occurred in a laboratory analysis (500ml) sample. Asbestos in ACM concentrations (%w/w) in such samples tend to be high in %w/w due to the weight of ACM fragments in relation to the total overall weight of the soil sample. The corresponding bulk field quantification sample at this same location did not identify any ACM.

8.1.2 Groundwater

The groundwater samples collected for the DSI encountered concentrations of copper above the ecological SAC (refer to Figure 3). The copper exceedances were generally consistent across the monitoring well network, and are considered to be associated with regional factors rather than site-specific contamination issues. Hence we consider the risk posed by copper in groundwater is low.

The pH of the groundwater from MW4 was outside the range generally accepted for ecological receptors.

Where temporary construction dewatering is required, it is expected that the management of such water would occur in accordance with the regulatory requirements so that no unacceptable construction-phase risks occur.

8.1.2.1 Other CoPC in Groundwater

Elevated concentrations of the other CoPC were not encountered above the adopted SAC in the groundwater samples analysed for the DSI and therefore are not considered to pose a risk to the receptors at the concentrations reported to date.

It is noted that a low concentration of TRH F1 was reported in MW224. Given the indicated groundwater flow direction and the position of the former off-site USTs relative to MW224, the detectable concentration of TRH F1 in MW224 is may be associated with this AEC (i.e. the former offsite USTs). The concentration was low and does not pose an unacceptable risk in the context of vapour intrusion.

The occurrence of trace concentrations of chloroform and bromodichloromethane in the groundwater is considered likely to be associated with interference from potable water (e.g. leaking pipes/potable water infrastructure). Chloroform and bromodichloromethane are VOCs within a group of compounds known as trihalomethanes, which are formed as a biproduct of the drinking water disinfection (i.e. chlorination) process. It is noted that chloroform and bromodichloromethane were detected at similar concentrations in the groundwater during the PSI.

8.1.2.2 Consideration of PSI Groundwater Data

Consideration and review of the entire dataset (including the PSI groundwater data) has been undertaken and the PSI groundwater results are presented in the tables attached in Appendix C. TRHs were not detected in MW4 or MW5 during the second round of sampling and analysis (i.e. during the DSI) and therefore no unacceptable risks were identified in the context of vapour intrusion from groundwater contamination in the context of the proposed development. There was also a general reduction in heavy metals concentrations between the PSI and DSI sampling events, most likely due to the further equilibration/stabilisation of the existing monitoring wells.

8.2 Decision Statements

The decision statements are addressed below:

Are any of the laboratory results above the SAC?

Yes.

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

There are potential health-based risks associated with asbestos in/on fill/soil. Based on the current data, the human health risks are considered to be low, however occupational exposure risk during the development will require management.

JKE is of the opinion that potential risks associated with groundwater at the site are low in the context of the proposed development and are not indicative of site contamination.

Is remediation required?

Remediation of the site is not considered to be required based on the current dataset. However, given the identification of asbestos in/on fill/soil at the site, the sampling limitations (i.e. sampling from boreholes instead of test pits), and the spatial data gaps (i.e. sampling not undertaken beneath the buildings and structures), a RAP is recommended for the proposed development so that risks remain low and acceptable.

We consider that it would be reasonable to include the requirements for further investigation within the RAP because a large portion of this work will need to occur after demolition. Additional details of the proposed development will also be required to carry out the risk assessment (e.g. details of buildings/structures being retained or demolished, proposed building footprints and finished floor levels, earthworks levels, locations of car parks and landscaped areas etc).

We anticipate that as a minimum the RAP will include a contingency for remediation of asbestos in soil, that will include the removal/off-site disposal of contaminated fill where practicable. In our opinion the scope of remediation will not need to extend to groundwater in the context of rendering the site suitable for the proposed development.

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 for the proposed development outlined in Section 1.1 via implementation of a RAP as described above.

8.3 Review of CSM and Data Gaps

A review of the CSM and an assessment of data gaps is provided in the following table:

Table 8-1: Review of CSM and Data Gap Assessment

Source/AEC	Review of CSM and Data Gap Assessment
Fill material	Fill ranging in depth between approximately 0.2m to 3mBGL was encountered across the site. The fill contained anthropogenic inclusions such as concrete and brick fragments, sand, ash, and slag. Due to the access constraints, probabilistic/grid-based sampling was not practicable on this site. It is also noted that sampling occurred from boreholes which poses limitations for identifying asbestos in fill, and sampling was not undertaken beneath the buildings/structures. Further investigation of the fill will be required following demolition of the buildings/structures and when access becomes available to assess the full extent of risks associated with this AEC. However, in our opinion, we consider it is likely that the fill conditions beneath the buildings will be consistent with those encountered in the PSI/DSI boreholes. It is recommended that additional sampling is undertaken via test pits if practicable. In our opinion, this work can be incorporated into the requirements under the RAP and this data gap does not alter our recommendations.
Use of Pesticides	Pesticides have not been detected to date. However, sampling has not occurred in the building footprints and further sampling/analysis of soils in these areas will be required. In our opinion, this work can be incorporated into the requirements under the RAP and this data gap does not alter our recommendations.
Hazardous Building Materials	Previous identification of asbestos (as ACM) in fill soils in the vicinity of BH12 and inclusions in fill soils were indicative of former demolition / construction activities (i.e. concrete and brick fragments). The buildings and structures on the site are of an age indicative of housing hazardous building materials (i.e. asbestos fibre cement and lead paint). JKE is not aware of a hazardous building materials register for the site. Subsequent to demolition, but before the slab is removed, a surface clearance for asbestos should be undertaken by a Licenced Asbestos Assessor (LAA). Further investigation of the fill beneath the buildings/structures will be required to assess the full extent of contamination risks on site as noted above.
On-site Fuel Storage (AST)	Based on the reported results to date, and at the time of reporting, risks associated with this AEC are considered to be low. Provisions are to be built into the RAP for inspections should this AST be removed, and for the potential identification of unexpected finds.
Off-site fuel storage areas	Based on the reported results to date, and at the time of reporting, on-site risks associated with this AEC are considered to be low and do not require further assessment. There were no TRH/BTEX detected in groundwater above the PQLs.

9 CONCLUSIONS AND RECOMMENDATIONS

The DSI included a review of existing project information, a site inspection, soil sampling from 24 boreholes and groundwater sampling from five monitoring wells (three new and two existing). The following potential contamination sources were identified at the site: fill material; use of pesticides; hazardous building materials (former and existing buildings and structures); fuel storage onsite (AST); and off-site fuel storage (upgradient former USTs).

The boreholes encountered fill materials to depths of approximately 0.2mBGL to 3mBGL, underlain by silty or clayey residual soils. The fill contained inclusions of igneous, ironstone, and sandstone gravel, latite and igneous cobbles, concrete and brick fragments, clay nodules, ash, slag, bark chips, tree roots, and root fibres. There was no FCF/ACM identified in any of the bulk asbestos quantification field screening samples during the DSI.

Potential health-based risks associated with asbestos in/on fill/soil are considered to be low, however further investigation is required following demolition and further risk assessment is required once this data is available. Ecological risks from fill soil were assessed to be low and acceptable.
JKE is of the opinion that potential risks associated with groundwater at the site are low in the context of the proposed development and are not indicative of site contamination that warrants remediation.

Remediation of the site is not considered to be required based on the current dataset. However, given the identification of asbestos in/on fill/soil at the site, the sampling limitations (i.e. sampling from boreholes instead of test pits), and the spatial data gaps (i.e. sampling not undertaken beneath the buildings and structures), a RAP is recommended for the proposed development so that risks remain low and acceptable.

We consider that it would be reasonable to include the requirements for further investigation within the RAP because a large portion of this work will need to occur after demolition. Additional details of the proposed development will also be required to carry out the risk assessment (e.g. details of buildings/structures being retained or demolished, proposed building footprints and finished floor levels, earthworks levels, locations of car parks and landscaped areas etc).

We anticipate that as a minimum the RAP will include a contingency for remediation of asbestos in soil, that will include the removal/off-site disposal of contaminated fill where practicable. In our opinion the scope of remediation will not need to extend to groundwater in the context of rendering the site suitable for the proposed development.

We are of the opinion that the site can be made suitable for the proposed hospital development provided the following recommendations are implemented:

1. Prepare an AMP to manage asbestos in soil risks in the context of the on-going use of the site as a hospital. This AMP will need to remain in force until the redevelopment occurs. Grass coverage across the site appears to currently be in good condition, and it is recommended that the grass coverage is maintained under provisions of the AMP;
2. Given ACM has been identified in the fill/soil and on the site surface, an LAA should be engaged and complete a walkover surface clearance inspection. Upon successful completion of the walkover inspection, a surface clearance certificate should be provided for the site;

3. Preparation and implementation of a RAP. The RAP is to include requirements for a post-demolition investigation(s) to adequately address the data gaps discussed in Section 8.3 of this report and outline a contingency for asbestos in/on fill if found at higher concentrations;
4. Should the post-demolition investigation identify additional contamination that requires remediation outlined in the RAP, an addendum RAP/Remedial work Plan (RWP) must be prepared and implemented;
5. Preparation and implementation of a construction-phase AMP; and
6. Preparation of a validation assessment report for the remediation works undertaken at the site.

If not already undertaken, a Hazardous Building Materials Assessment (HAZMAT) must be undertaken for the existing buildings/structures at the site prior to the commencement of demolition work.

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

10 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 landuse. 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

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

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

Title:	**SITE LOCATION PLAN**
Location:	85-91 COWPER STREET, WARRAWONG, NSW
Project No: E34300PT2	Figure No: 1

JKEnvironments

PLOT DATE: 13/09/2023 11:23:53 AM DWG FILE: K:\5C EIS JOBS\34000'S\E34300PT DUNMORE\CAD\E34300PT2\E34300PT2.DWG

LEGEND

(red dashed line)	APPROXIMATE SITE BOUNDARY
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
FCF(Surface)	FIBRE CEMENT FRAGMENT LOCATION, NUMBER AND DEPTH (Surface/m)
BH102	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH/MW101	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH102	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW213	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 10 20 30 40 50
SCALE 1:1000 @A3 METRES

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

Title: **SAMPLE LOCATION PLAN**

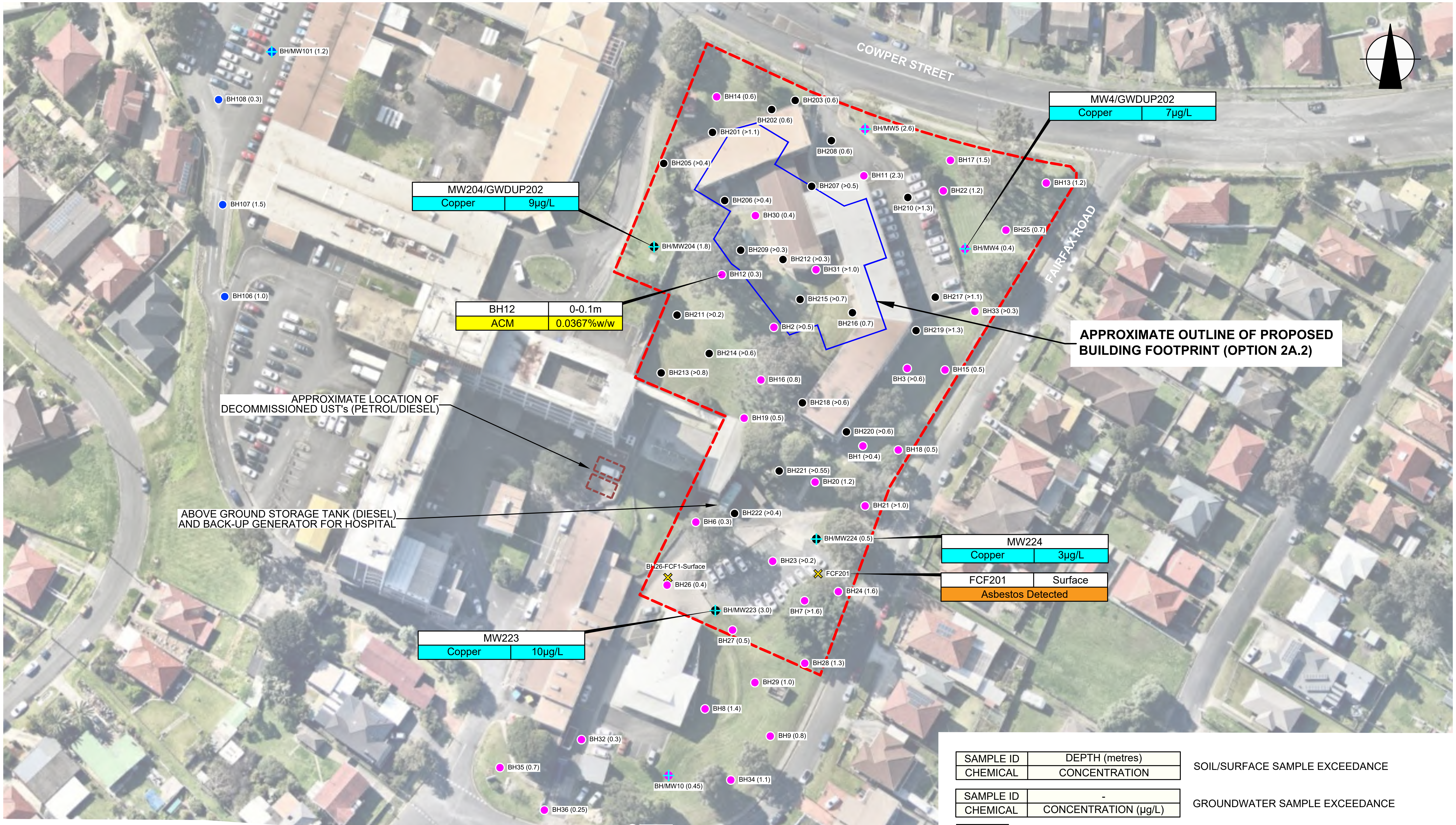
Location: 85-91 COWPER STREET, WARRAWONG, NSW

Project No: E34300PT2

Figure No: 2

JKEnvironments

PLOT DATE: 28/08/2023 10:53:05 AM DWG FILE: K:\5C EIS JOBS\34000'S\E34300PT DUNMORE\CAD\E34300PT2\E34300PT2.DWG



SAMPLE ID	DEPTH (metres)	SOIL/SURFACE SAMPLE EXCEEDANCE
CHEMICAL	CONCENTRATION	

SAMPLE ID	-	GROUNDWATER SAMPLE EXCEEDANCE
CHEMICAL	CONCENTRATION (µg/L)	

- (yellow) SOIL/SURFACE CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK
- (cyan) GROUNDWATER CONTAMINATION ABOVE SAC
- (orange) ASBESTOS DETECTED - NOT ABOVE SAC

LEGEND

— — —	APPROXIMATE SITE BOUNDARY
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
FCF(Surface)	FIBRE CEMENT FRAGMENT LOCATION, NUMBER AND DEPTH (Surface/m)
BH102	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH/MW101	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH102	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW213	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 10 20 30 40 50
SCALE 1:1000 @A3 METRES

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

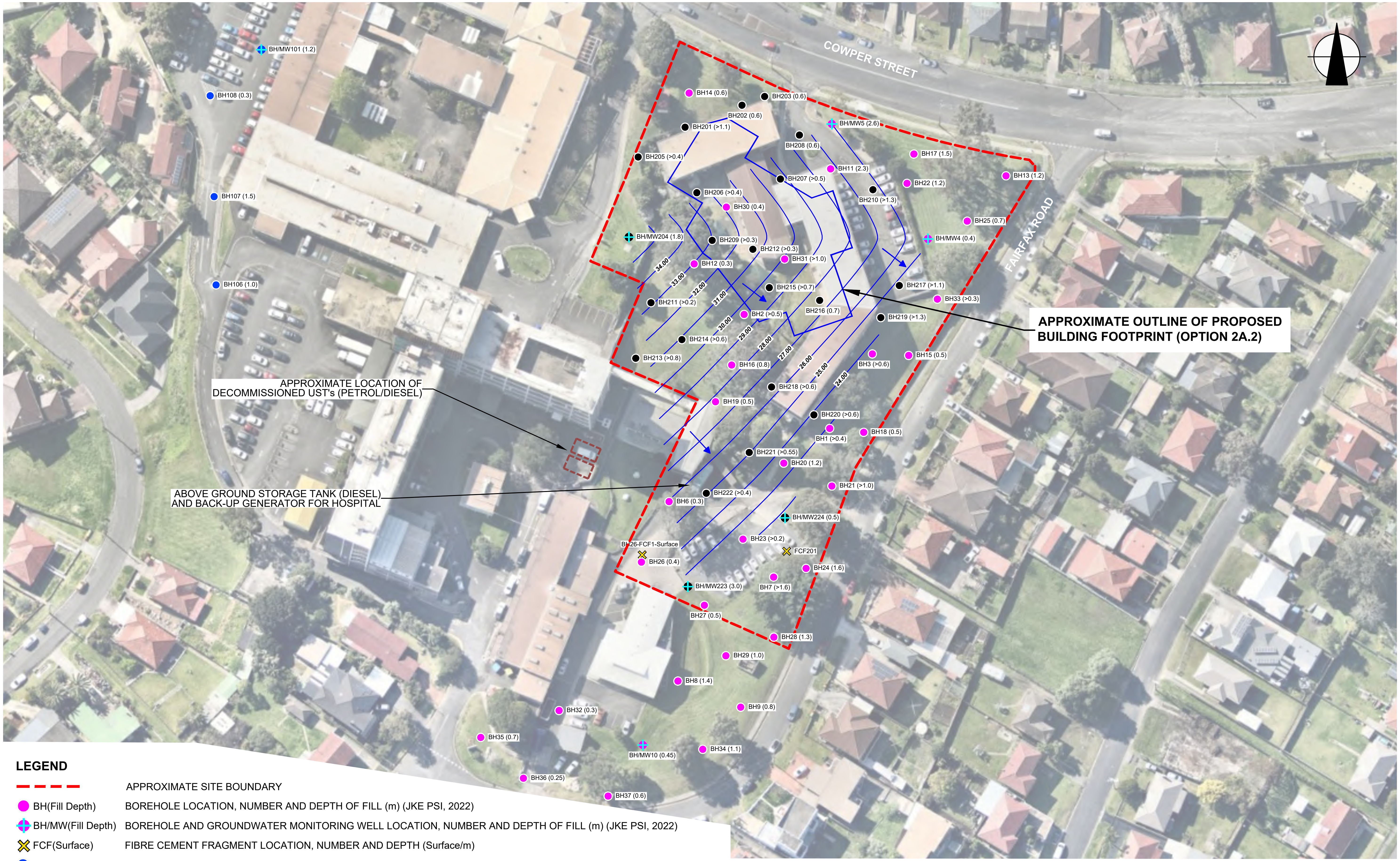
Title: **SAC EXCEEDANCE PLAN**

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Project No: E34300PT2 | Figure No: 3

JKEnvironments

PLOT DATE: 1/09/2023 11:28:55 AM DWG FILE: K:\5C EIS JOBS\34000'S\E34300PT DUNMORE\CAD\E34300PT2\E34300PT2.DWG



LEGEND

(red dashed line)	APPROXIMATE SITE BOUNDARY
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
FCF(Surface)	FIBRE CEMENT FRAGMENT LOCATION, NUMBER AND DEPTH (Surface/m)
BH102	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH/MW101	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH102	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW213	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
24.50	GROUNDWATER CONTOUR INTERVALS (m)
(blue arrow)	INFERRED GROUNDWATER FLOW DIRECTION

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 10 20 30 40 50

SCALE 1:1000 @A3 METRES

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

Title: **GROUNDWATER CONTOUR PLOT**

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Project No: E34300PT2

Figure No: 4

JKEnvironments

PLOT DATE: 1/09/2023 12:37:16 PM DWG FILE: K:\5C EIS JOBS\34000'S\E34300PT DUNMORE\CAD\E34300PT2\E34300PT2.DWG

Appendix B: Laboratory 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).

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.

JKEnvironments

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: Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	PAHs: Total PAHs	Carcinogenic PAHs	ORGANOCHLORINE PESTICIDES (OCPs): HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	OP PESTICIDES (OPPs): Chlorpyrifos	TOTAL PCBs	ASBESTOS FIBRES
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	0-0.1	F: Silty clay	<4	<0.4	14	93	23	0.1	9	85	<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]	0-0.1	F: Silty clay	<4	<0.4	14	99	24	0.2	9	160	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH1 - [TRIPLICATE]	0-0.1	F: Silty clay	<4	<0.4	14	100	22	0.2	8	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	0.2-0.4	F: Silty clay	<4	<0.4	12	100	17	<0.1	8	73	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1 - [LAB_DUP]	0.2-0.4	F: Silty clay	<4	<0.4	9	64	15	<0.1	7	59	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1 - [TRIPLICATE]	0.2-0.4	F: Silty clay	<4	<0.4	8	59	12	<0.1	6	41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0-0.1	F: Silty clay	<4	<0.4	12	52	18	<0.1	7	76	<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	0.2-0.4	F: Silty clay	<8	<0.4	8	56	3	<0.1	6	11	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH3	0-0.1	F: Silty clay	<4	<0.4	21	96	29	<0.1	9	99	<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	0.2-0.4	F: Silty clay	<4	<0.4	9	100	12	<0.1	10	49	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH4	0-0.1	F: Silty clay	<4	<0.4	22	87	24	<0.1	10	76	<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	0-0.1	F: Silty clay	<4	<0.4	12	100	9	<0.1	9	44	<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	0.8-1.0	F: Silty clay	<4	<0.4	20	84	17	<0.1	10	52	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH6	0.05-0.15	F: Sandy gravel	<4	<0.4	10	92	4	<0.1	6	24	0.1	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH7	0-0.1	F: Silty clay	<4	<0.4	20	67	18	<0.1	8	74	<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	0.6-0.8	F: Silty clay	<4	<0.4	7	47	4	<0.1	4	8	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH11	0.05-0.15	F: Sandy gravel	<4	<0.4	8	160	4	<0.1	6	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
BH11	0.7-0.9	F: Silty clay	<4	<0.4	6	73	4	<0.1	9	21	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH11	1.3-1.5	F: Silty clay	<4	<0.4	20	69	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
BH11	2.3-2.5	Silty sandy clay	<4	<0.4	4	53	6	<0.1	11	32	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH12	0-0.1	F: Silty clay	<4	<0.4	16	57	21	<0.1	12	69	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Detected
BH12	0.2-0.3	F: silty sandy clay	<4	<0.4	6	58	8	<0.1	11	23	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH13	0-0.1	F: Silty clay	<4	<0.4	14	52	54	<0.1	11	140	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH13	1.0-1.2	F: silty sandy clay	<4	<0.4	4	55	2	<0.1	8	12	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH14	0-0.1	F: Silty clay	<4	<0.4	19	68	15	<0.1	12	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
BH15	0-0.1	F: Silty clay	<4	<0.4	12	72	24	<0.1	7	73	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH15	0.4-0.6	F: Silty clay	<4	<0.4	15	98	66	<0.1	11	150	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH16	0-0.1	F: Silty clay	<4	<0.4	19	53	17	<0.1	6	47	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH17	0-0.1	F: Silty clay	<4	<0.4	21	69	38	<0.1	8	88	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH18	0-0.1	F: Silty clay	<4	<0.4	17	48	21	<0.1	12	59	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH18	0.1-0.2	F: Sandy gravel	<4	<0.4	6	36	4	<0.1	9	20	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH18	0.1-0.2	F: Sandy gravel	<4	<0.4	6	19	3	<0.1	10	11	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH18 - [LAB_DUP]	0.1-0.2	F: Sandy gravel	<4	<0.4	5	18	3	<0.1	9	12	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH19	0-0.1	F: Silty clay	<4	0.9	15	91	33	<0.1	8	100	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH20	0-0.1	F: Silty clay	<4	<0.4	12	50	21	<0.1	9	73	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH20	0.7-0.9	F: Silty clay	<4	<0.4	5	35	3	<0.1	4	8	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH21	0-0.1	F: Silty clay	<4	<0.4	18	72	28	<0.1	9	79	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH22	0-0.1	F: Silty clay	<4	<0.4	20	82	35	<0.1	8	91	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH23	0-0.1	F: Sandy gravel	6	<0.4	13	19	8	<0.1	13	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
BH24	0-0.1	F: Silty sand	<4	<0.4	18	58	20	<0.1	8	67	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH25	0-0.1	F: Silty clay	<4	<0.4	22	76	33	<0.1	8	89	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH25	0.7-0.9	Silty sandy clay	<4	<0.4	12	140	4	<0.1	11	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
BH26	0-0.1	F: Sandy gravel	<4	<0.4	5	16	3	<0.1	2	24	0.2	<0.5	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH26-FCF1-Surface	Surface	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH26	0.2-0.4	F: Silty clay	<4	<0.4	11	70	21	<0.1	11	94	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH26	0.5-0.7	Silty sandy clay	<4	<0.4	9	110	7	<0.1	12	35	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH26 - [LAB_DUP]	0.5-0.7	Silty sandy clay	<4	<0.4	8	120	8	<0.1	13	33	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH27	0-0.1	F: Silty clay	<4	<0.4	17	49	21	<0.1	6	48	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH27 - [LAB_DUP]	0-0.1	F: Silty clay	<4	<0.4	17	46	21	<0.1	6	44	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH28	0-0.1	F: Silty clay	<4	<0.4	19	64	26	<0.1	7	67	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH30	0-0.1	F: Silty clay	6	<0.4	14	130	29	0.2	7	87	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH30	0.4-0.6	Silty sandy clay	<4	<0.4	28	82	6	<0.1	19	49	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH31	0-0.1	F: Silty clay	<4	<0.4	15	58	16	<0.1	8	59	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH33	0-0.1	F: Silty clay	<4	<0.4	15	45	18	<0.1	9	52	<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	BH24 0-0.1	F: Silty clay	<4	<0.4	26	67	17	<0.1	10	95	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA
SDUP1	BH24 0-0.1	F: Silty clay	<4	<0.4	25	64	18	<0.1	11	90	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA
SDUP4	BH15 0-0.1	F: Silty clay	<4	<0.4	12	50	23	<0.1	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
SDUP5	BH3 0-0.1	F: Silty clay	<4	<0.4	26	100	23	<0.1	10	140	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA
SDUP6	BH17 0-0.1	F: Silty clay	<4	<0.4	22	71	39	<0.1	8	90	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP7	BH22 0-0.1	F: Silty clay	4	<0.4	28	100	33	<0.1	10	120	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA
BH201	0-0.2	F: Silty Clay	<4	<0.4	19	100	24	0.1	11	84	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH201 - [LAB_DUP]	0-0.2	F: Silty Clay	<4	<0.4	23	110	31	<0.1	12	96	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH201	0.4-0.6	F: Silty Sandy Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH201	0.8-1	F: Silty Sandy Clay	<4	<0.4	17	110	19	<0.1	13	56	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH202	0-0.2	F: Silty Sandy Clay	<4	<0.4	35	110	18	0.1	16	61	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH202	1-1.2	Silty Sandy Clay	<4	<0.4	27	130	5	<0.1	12	48	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH203	0-0.2	F: Silty Sandy Clay	<4	<0.4	29	84	32	<0.1	13	89	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH203	0.8-1	Silty Clay	<4	<0.4	22	74	8	<0.1	8	17	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH204	0-0.2	F: Silty Clay	5	<0.4	10	60	18	<0.1	8	63	0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH204	1.7-1.8	F: Silty Sandy Clay	<4	<0.4	9	85	4	<0.1	14	21	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH205	0-0.2	F: Silty Clay	4	<0.4	10	30	15	<0.1	12	40	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH205 - [LAB_DUP]	0-0.2	F: Silty Clay	<4	<0.4	10	28	15	<0.1	13	38	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH205	0.8-1	F: Silty Clay	<4	<0.4	12	79	12	<0.1	11	35	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH206	0-0.4	F: Silty Sandy Clay	5	<0.4	21	97	38	<0.1	12	180	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH207	0-0.4	F: Silty Clay	<4	<0.4	22	77	35	0.1	9	120	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH208	0.1-0.3	F: Silty Clay	<4	<0.4	19	71	11	<0.1	7	33	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH208	0.7-1	Silty Sandy Clay	<4	<0.4	17	87	6	<0.1	8	19	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH209	0-0.3	F: Silty Clay	6	<0.4	16	67	34	<0.1	13	150	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH210	0.1-0.3	F: Silty Clay	<4	<0.4	3	27	12	<0.1	6	28	1.4	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH210	0.7-1	F: Silty Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH210	1-1.3	F: Gravelly Clay	<4	1	8	56	18	<0.1	10	34	1.9	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH211	0-0.2	F: Silty Sandy Clay	<4	<0.4	29	97	23	0.1	13	77	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH212	0-0.3	F: Silty Sandy Clay	<4	<0.4	9	24	12	<0.1	3	57	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH212 - [LAB_DUP]	0-0.3	F: Silty Sandy Clay	4	<0.4	9	24	12	<0.1	4	62	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH213	0-0.2	F: Silty Sandy Clay	<4	<0.4	27	140	29	<0.1	13	98	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH213	0.4-0.6	F: Silty Sandy Clay	<4	<0.4	<1	9	<1	0.2	<1	<1	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH214	0-0.2	F: Silty Sandy Clay	<4	<0.4	23	84	15	<0.1	11	60	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH215	0-0.2	F: Silty Sandy Clay	4	<0.4	10	34	19	<0.1	9	56	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH215	0.4-0.6	F: Silty Sandy Clay	<4	<0.4	<1	2	<1	<0.1	<1	2	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH216	0-0.2	F: Silty Sandy Clay	<4	<0.4	18	110	13	<0.1	10	53	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH216	1.1-1.3	Silty Sandy Clay	<4	<0.4	13	98	14	<0.1	11	44	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH217	0.1-0.3	F: Silty Clay	12	<0.4	3	44	16	<0.1	19	39	1.7	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH217	0.7-1	F: Silty Clay	<4	<0.4	<1	4	<1	<0.1	<1	2	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH218	0-0.2	F: Silty Clay	<4	<0.4	27	120	15	<0.1	13	54	0.6	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH219	0-0.2	F: Silty Sandy Clay	<4	<0.4	27	110	41	0.1	10	100	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH219 - [LAB_DUP]	0-0.2	F: Silty Sandy Clay	<4	<0.4	25	100	44	<0.1	10	110	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH219	1.1-1.3	F: Silty Sandy Clay	<4	<0.4	5	40	3	<0.1	4	16	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH220	0-0.2	F: Silty Sandy Clay	<4	<0.4	15	57	21	<0.1	8	68	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH221	0-0.1	F: Sandy silty clay	<4	<0.4	19	57	21	<0.1	12	65	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH221 - [LAB_DUP]	0-0.1	F: Sandy silty clay	5	<0.4	14	40	25	<0.1	12	65	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH221	0.4-0.55	F: Silty clay	<4	<0.4	20	93	28	<0.1	12	160	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH222	0-0.1	F: Silty clay	<4	<0.4	26	84	37	0.2	12	120	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH223	0-0.1	F: Silty clay	<4	<0.4	17	60	19	<0.1	7	100	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH223	0.3-0.4	F: Silty clay	<4	<0.4	17	76	20	<0.1	9	81	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH223	1.0-1.2	F: clayey sand	<4	<0.4	10	73	2	<0.1	11	32	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH224	0-0.1	F: sandy gravel	7	<0.4	14	22	10	<0.1	13	47	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH224	0.3-0.5	F: gravelly clay	7	<0.4	16	27	10	<0.1	17	53	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH224	0.75-0.95	Sandy silty clay	<4	<0.4	20	64	14	<0.1	7	27	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
S DUP 1	BH205 0-0.1	Fill	5	<0.4	11	32	19	<0.1	12	49	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
S DUP 2	BH201 0-0.1	Fill	<4	<0.4	17	110	30	<0.1	11	79	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
S DUP 3	BH202 0-0.1	Fill	<4	<0.4	22	79	13	<0.1	13	52	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
S DUP 4	BH203 0-0.1	Fill	<4	<0.4	32	88	33	<0.1	13	95	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
S DUP 5	BH219 0-0.1	Fill	<4	<0.4	27	97	28	<0.1	10	77	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
S DUP 6	BH215 0-0.1	Fill	<4	<0.4	10	33	17	<0.1	7	53	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP201	BH222 0-0.2	Fill	<4	<0.4	21	95	16	<0.1	9	56	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
SDUP201	BH222 0-0.2	Fill	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	NA	NA
FCF-201	SURFACE	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
Total Number of Samples			53	53	53	53	53	53	53	53	53	53	26	26	26	26	26	26	26	27	26	25
Maximum Value			12	1	35	140	44	0.2	19	180	1.9	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Detected

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
Note: Total number of samples and maximum values consider only the DSI data and not the PSI data. In addition, the grey shaded samples are from the PSI 2022.

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	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH1 - [LAB_DUP]	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH1	0.2-0.4	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH1 - [LAB_DUP]	0.2-0.4	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH2	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH2	0.2-0.4	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH3	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH3	0.2-0.4	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH4	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH5	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH5	0.8-1.0	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH6	0.05-0.15	F: Sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH7	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH7	0.6-0.8	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH11	0.05-0.15	F: Sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH11	0.7-0.9	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH11	1.3-1.5	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH11	2.3-2.5	Silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH12	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH12	0.2-0.3	F: silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH13	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH13	1.0-1.2	F: silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH14	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH15	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH15	0.4-0.6	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH16	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH17	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH18	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH18	0.1-0.2	F: Sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH18	0.1-0.2	F: Sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	3.2
BH18 - [LAB_DUP]	0.1-0.2	F: Sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	3.2
BH19	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH20	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH20	0.7-0.9	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH21	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH22	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH23	0-0.1	F: Sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH24	0-0.1	F: Silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH25	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH25	0.7-0.9	Silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH26	0-0.1	F: Sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH26	0.2-0.4	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH26	0.5-0.7	Silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH26 - [LAB_DUP]	0.5-0.7	Silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH27	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH27 - [LAB_DUP]	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH28	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH30	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH30	0.4-0.6	Silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH31	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH32	0.05-0.15	F: Gravelly clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH33	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
SDUP1	BH24 0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP4	BH15 0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP5	BH3 0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP5 - [LAB_DUP]	BH3 0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP6	BH17 0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
SDUP7	BH22 0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	NA
BH201	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.5
BH201 - [LAB_DUP]	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.5
BH201	0.8-1	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1
BH202	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1
BH202	1-1.2	Silty Sandy Clay	1m to <2m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.7
BH203	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.9
BH203	0.8-1	Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.1
BH204	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH204	1.7-1.8	F: Silty Sandy Clay	1m to <2m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH205	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.2
BH205 - [LAB_DUP]	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.2
BH205	0.8-1	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1
BH206	0-0.4	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.9
BH207	0-0.4	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH208	0.1-0.3	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH208	0.7-1	Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH209	0-0.3	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.5
BH210	0.1-0.3	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH210	1-1.3	F: Gravelly Clay	1m to <2m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH211	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.4
BH212	0-0.3	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.3
BH212 - [LAB_DUP]	0-0.3	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.3
BH213	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.1
BH213	0.4-0.6	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
BH214	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.5
BH215	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.8
BH215	0.4-0.6	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.1
BH216	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.4
BH216	1.1-1.3	Silty Sandy Clay	1m to <2m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.5
BH217	0.1-0.3	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH217	0.7-1	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH218	0-0.2	F: Silty Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	3.3
BH219	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.3
BH219 - [LAB_DUP]	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.3
BH219	1.1-1.3	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	2.4
BH220	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	1.7
BH221	0-0.1	F: Sandy silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.1
BH221 - [LAB_DUP]	0-0.1	F: Sandy silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.1
BH221	0.4-0.55	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH222	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.2
BH223	0-0.1	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH223	0.3-0.4	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH223	1.0-1.2	F: clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH224	0-0.1	F: sandy gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.3
BH224	0.3-0.5	F: gravelly clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
BH224	0.75-0.95	Sandy silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0.1
S DUP 1	BH205 0-0.1	Fill	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	-
S DUP 2	BH201 0-0.1	Fill	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	-
S DUP 3	BH202 0-0.1	Fill	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	-
S DUP 4	BH203 0-0.1	Fill	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	-
S DUP 5	BH219 0-0.1	Fill	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	-
S DUP 6	BH215 0-0.1	Fill	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	-
SDUP201	BH222 0-0.2	Fill	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	-
Total Number of Samples					53	53	53	53	53	53	53	46
Maximum Value					<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	3.3

Concentration above the SAC — VALUE
Concentration above the PQL — **Bold**
The guideline corresponding to the concentration above the SAC is highlighted in dark grey in the Site Assessment Criteria Table below
Note: Total number of samples and maximum values consider only the DSI data and not the PSI data. In addition, the grey shaded samples are from the PSI 2022.

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	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1 - [LAB_DUP]	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1	0.2-0.4	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH1 - [LAB_DUP]	0.2-0.4	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH2	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH2	0.2-0.4	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH3	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH3	0.2-0.4	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH4	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH5	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH5	0.8-1.0	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH6	0.05-0.15	F: Sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH7	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH7	0.6-0.8	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH11	0.05-0.15	F: Sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH11	0.7-0.9	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH11	1.3-1.5	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH11	2.3-2.5	Silty sandy clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH12	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH12	0.2-0.3	F: silty sandy clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH13	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH13	1.0-1.2	F: silty sandy clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH14	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH15	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH15	0.4-0.6	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH16	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH17	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH18	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH18	0.1-0.2	F: Sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH18	0.1-0.2	F: Sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH18 - [LAB_DUP]	0.1-0.2	F: Sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH19	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH20	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH20	0.7-0.9	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH21	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH22	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH23	0-0.1	F: Sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH24	0-0.1	F: Silty sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH25	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH25	0.7-0.9	Silty sandy clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH26	0-0.1	F: Sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH26	0.2-0.4	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH26	0.5-0.7	Silty sandy clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH26 - [LAB_DUP]	0.5-0.7	Silty sandy clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH27	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH27 - [LAB_DUP]	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH28	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH30	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH30	0.4-0.6	Silty sandy clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH31	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH33	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP1	BH24 0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP4	BH15 0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP5	BH3 0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP5 - [LAB_DUP]	BH3 0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP6	BH17 0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP7	BH22 0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH201	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH201 - [LAB_DUP]	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH201	0.8-1	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH202	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH202	1-1.2	Silty Sandy Clay	1m to <2m	Sand	70	240	0.5	220	NL	60	NL
BH203	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH203	0.8-1	Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH204	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH204	1.7-1.8	F: Silty Sandy Clay	1m to <2m	Sand	70	240	0.5	220	NL	60	NL
BH205	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH205 - [LAB_DUP]	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH205	0.8-1	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH206	0-0.4	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH207	0-0.4	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH208	0.1-0.3	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH208	0.7-1	Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH209	0-0.3	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH210	0.1-0.3	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH210	1-1.3	F: Gravelly Clay	1m to <2m	Sand	70	240	0.5	220	NL	60	NL
BH211	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH212	0-0.3	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH212 - [LAB_DUP]	0-0.3	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH213	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH213	0.4-0.6	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH214	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH215	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH215	0.4-0.6	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH216	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH216	1.1-1.3	Silty Sandy Clay	1m to <2m	Sand	70	240	0.5	220	NL	60	NL
BH217	0.1-0.3	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH217	0.7-1	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH218	0-0.2	F: Silty Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH219	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH219 - [LAB_DUP]	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH219	1.1-1.3	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH220	0-0.2	F: Silty Sandy Clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH221	0-0.1	F: Sandy silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH221 - [LAB_DUP]	0-0.1	F: Sandy silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH221	0.4-0.55	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH222	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH223	0-0.1	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH223	0.3-0.4	F: Silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH223	1.0-1.2	F: clayey sand	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH224	0-0.1	F: sandy gravel	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH224	0.3-0.5	F: gravelly clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
BH224	0.75-0.95	Sandy silty clay	0m to <1m	Sand	45	110	0.5	160	55	40	3
S DUP 1	BH205 0-0.1	Fill	0m to <1m	Sand	45	110	0.5	160	55	40	3
S DUP 2	BH201 0-0.1	Fill	0m to <1m	Sand	45	110	0.5	160	55	40	3
S DUP 3	BH202 0-0.1	Fill	0m to <1m	Sand	45	110	0.5	160	55	40	3
S DUP 4	BH203 0-0.1	Fill	0m to <1m	Sand	45	110	0.5	160	55	40	3
S DUP 5	BH219 0-0.1	Fill	0m to <1m	Sand	45	110	0.5	160	55	40	3
S DUP 6	BH215 0-0.1	Fill	0m to <1m	Sand	45	110	0.5	160	55	40	3
SDUP201	BH222 0-0.2	Fill	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	0-0.1	Fine	<25	<50	<100	<100
BH1 - [LAB_DUP]	0-0.1	Fine	<25	<50	**100**	<100
BH1	0.2-0.4	Fine	<25	<50	<100	<100
BH1 - [LAB_DUP]	0.2-0.4	Fine	<25	<50	<100	<100
BH2	0-0.1	Fine	<25	<50	<100	<100
BH2	0.2-0.4	Fine	<25	<50	<100	<100
BH3	0-0.1	Fine	<25	<50	<100	<100
BH3	0.2-0.4	Fine	<25	<50	<100	<100
BH4	0-0.1	Fine	<25	<50	<100	<100
BH5	0-0.1	Fine	<25	<50	<100	<100
BH5	0.8-1.0	Fine	<25	<50	<100	<100
BH6	0.05-0.15	Fine	<25	<50	**110**	**190**
BH7	0-0.1	Fine	<25	<50	**150**	<100
BH7	0.6-0.8	Fine	<25	<50	<100	<100
BH11	0.05-0.15	Fine	<25	<50	<100	<100
BH11	0.7-0.9	Fine	<25	<50	<100	<100
BH11	1.3-1.5	Fine	<25	<50	**220**	<100
BH11	2.3-2.5	Fine	<25	<50	<100	<100
BH12	0-0.1	Fine	<25	<50	**110**	<100
BH12	0.2-0.3	Fine	<25	<50	<100	<100
BH13	0-0.1	Fine	<25	<50	**130**	<100
BH13	1.0-1.2	Fine	<25	<50	<100	<100
BH14	0-0.1	Fine	<25	<50	<100	<100
BH15	0-0.1	Fine	<25	<50	<100	<100
BH15	0.4-0.6	Fine	<25	<50	<100	<100
BH16	0-0.1	Fine	<25	<50	**160**	<100
BH17	0-0.1	Fine	<25	<50	<100	<100
BH18	0-0.1	Fine	<25	<50	<100	<100
BH18	0.1-0.2	Fine	<25	<50	<100	<100
BH18	0.1-0.2	Fine	<25	<50	<100	<100
BH18 - [LAB_DUP]	0.1-0.2	Fine	<25	<50	<100	<100
BH19	0-0.1	Fine	<25	<50	**110**	<100
BH20	0-0.1	Fine	<25	<50	**100**	<100
BH20	0.7-0.9	Fine	<25	<50	<100	<100
BH21	0-0.1	Fine	<25	<50	**140**	<100
BH22	0-0.1	Fine	<25	<50	**140**	<100
BH23	0-0.1	Fine	<25	<50	<100	<100
BH24	0-0.1	Fine	<25	<50	**160**	<100
BH25	0-0.1	Fine	<25	<50	<100	<100
BH25	0.7-0.9	Fine	<25	<50	<100	<100
BH26	0-0.1	Fine	<25	<50	**140**	**190**
BH26	0.2-0.4	Fine	<25	<50	<100	<100
BH26	0.5-0.7	Fine	<25	<50	<100	<100
BH26 - [LAB_DUP]	0.5-0.7	Fine	<25	<50	<100	<100
BH27	0-0.1	Fine	<25	<50	**100**	<100
BH27 - [LAB_DUP]	0-0.1	Fine	<25	<50	<100	<100
BH28	0-0.1	Fine	<25	<50	<100	<100
BH30	0-0.1	Fine	<25	<50	<100	<100
BH30	0.4-0.6	Fine	<25	<50	<100	<100
BH31	0-0.1	Fine	<25	<50	<100	<100
BH33	0-0.1	Fine	<25	<50	<100	<100
SDUP1	BH24 0-0.1	Fine	<25	<50	**140**	<100
SDUP4	BH15 0-0.1	Fine	<25	<50	<100	<100
SDUP5	BH3 0-0.1	Fine	<25	<50	**100**	<100
SDUP5 - [LAB_DUP]	BH3 0-0.1	Fine	<25	<50	**110**	<100
SDUP6	BH17 0-0.1	Fine	<25	<50	<100	<100
SDUP7	BH22 0-0.1	Fine	<25	<50	<100	<100
BH201	0-0.2	Fine	<25	<50	<100	<100
BH201 - [LAB_DUP]	0-0.2	Fine	<25	<50	<100	<100
BH201	0.8-1	Fine	<25	<50	<100	<100
BH202	0-0.2	Fine	<25	<50	<100	<100
BH202	1-1.2	Fine	<25	<50	<100	<100
BH203	0-0.2	Fine	<25	<50	<100	<100
BH203	0.8-1	Fine	<25	<50	<100	<100
BH204	0-0.2	Fine	<25	<50	**110**	<100
BH204	1.7-1.8	Fine	<25	<50	<100	<100
BH205	0-0.2	Fine	<25	<50	<100	<100
BH205 - [LAB_DUP]	0-0.2	Fine	<25	<50	<100	<100
BH205	0.8-1	Fine	<25	<50	<100	<100
BH206	0-0.4	Fine	<25	<50	<100	<100
BH207	0-0.4	Fine	<25	<50	<100	<100
BH208	0.1-0.3	Fine	<25	<50	<100	<100
BH208	0.7-1	Fine	<25	<50	<100	<100
BH209	0-0.3	Fine	<25	<50	**110**	<100
BH210	0.1-0.3	Fine	<25	<50	<100	<100
BH210	1-1.3	Fine	<25	<50	<100	<100
BH211	0-0.2	Fine	<25	<50	<100	<100
BH212	0-0.3	Fine	<25	<50	<100	<100
BH212 - [LAB_DUP]	0-0.3	Fine	<25	<50	<100	<100
BH213	0-0.2	Fine	<25	<50	<100	<100
BH213	0.4-0.6	Fine	<25	<50	<100	<100
BH214	0-0.2	Fine	<25	<50	<100	<100
BH215	0-0.2	Fine	<25	<50	<100	<100
BH215	0.4-0.6	Fine	<25	<50	<100	<100
BH216	0-0.2	Fine	<25	<50	<100	<100
BH216	1.1-1.3	Fine	<25	<50	<100	<100
BH217	0.1-0.3	Fine	<25	<50	**110**	<100
BH217	0.7-1	Fine	<25	<50	<100	<100
BH218	0-0.2	Fine	<25	<50	<100	<100
BH219	0-0.2	Fine	<25	<50	<100	<100
BH219 - [LAB_DUP]	0-0.2	Fine	<25	<50	<100	<100
BH219	1.1-1.3	Fine	<25	<50	<100	<100
BH220	0-0.2	Fine	<25	<50	<100	<100
BH221	0-0.1	Fine	<25	<50	<100	<100
BH221 - [LAB_DUP]	0-0.1	Fine	<25	<50	<100	<100
BH221	0.4-0.55	Fine	<25	<50	<100	<100
BH222	0-0.1	Fine	<25	<50	<100	<100
BH223	0-0.1	Fine	<25	<50	<100	<100
BH223	0.3-0.4	Fine	<25	<50	<100	<100
BH223	1.0-1.2	Coarse	<25	<50	<100	<100
BH224	0-0.1	Coarse	<25	<50	<100	<100
BH224	0.3-0.5	Fine	<25	<50	<100	<100
BH224	0.75-0.95	Fine	<25	<50	<100	<100
S DUP 1	BH205 0-0.1	Fine	<25	<50	<100	<100
S DUP 2	BH201 0-0.1	Fine	<25	<50	<100	<100
S DUP 3	BH202 0-0.1	Fine	<25	<50	<100	<100
S DUP 4	BH203 0-0.1	Fine	<25	<50	<100	<100
S DUP 5	BH219 0-0.1	Fine	<25	<50	<100	<100
S DUP 6	BH215 0-0.1	Fine	<25	<50	<100	<100
SDUP201	BH222 0-0.2	Fine	<25	<50	<100	<100
Total Number of Samples			53	53	53	53
Maximum Value			<PQL	<PQL	110	<PQL

Concentration above the SAC — VALUE
Concentration above the PQL — **Bold**
Note: Total number of samples and maximum values consider only the DSI data and not the PSI data. In addition, the grey shaded samples are from the PSI 2022.

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	0-0.1	Fine	800	1000	3500	10000
BH1 - [LAB_DUP]	0-0.1	Fine	800	1000	3500	10000
BH1	0.2-0.4	Fine	800	1000	3500	10000
BH1 - [LAB_DUP]	0.2-0.4	Fine	800	1000	3500	10000
BH2	0-0.1	Fine	800	1000	3500	10000
BH2	0.2-0.4	Fine	800	1000	3500	10000
BH3	0-0.1	Fine	800	1000	3500	10000
BH3	0.2-0.4	Fine	800	1000	3500	10000
BH4	0-0.1	Fine	800	1000	3500	10000
BH5	0-0.1	Fine	800	1000	3500	10000
BH5	0.8-1.0	Fine	800	1000	3500	10000
BH6	0.05-0.15	Fine	800	1000	3500	10000
BH7	0-0.1	Fine	800	1000	3500	10000
BH7	0.6-0.8	Fine	800	1000	3500	10000
BH11	0.05-0.15	Fine	800	1000	3500	10000
BH11	0.7-0.9	Fine	800	1000	3500	10000
BH11	1.3-1.5	Fine	800	1000	3500	10000
BH11	2.3-2.5	Fine	800	1000	3500	10000
BH12	0-0.1	Fine	800	1000	3500	10000
BH12	0.2-0.3	Fine	800	1000	3500	10000
BH13	0-0.1	Fine	800	1000	3500	10000
BH13	1.0-1.2	Fine	800	1000	3500	10000
BH14	0-0.1	Fine	800	1000	3500	10000
BH15	0-0.1	Fine	800	1000	3500	10000
BH15	0.4-0.6	Fine	800	1000	3500	10000
BH16	0-0.1	Fine	800	1000	3500	10000
BH17	0-0.1	Fine	800	1000	3500	10000
BH18	0-0.1	Fine	800	1000	3500	10000
BH18	0.1-0.2	Fine	800	1000	3500	10000
BH18	0.1-0.2	Fine	800	1000	3500	10000
BH18 - [LAB_DUP]	0.1-0.2	Fine	800	1000	3500	10000
BH19	0-0.1	Fine	800	1000	3500	10000
BH20	0-0.1	Fine	800	1000	3500	10000
BH20	0.7-0.9	Fine	800	1000	3500	10000
BH21	0-0.1	Fine	800	1000	3500	10000
BH22	0-0.1	Fine	800	1000	3500	10000
BH23	0-0.1	Fine	800	1000	3500	10000
BH24	0-0.1	Fine	800	1000	3500	10000
BH25	0-0.1	Fine	800	1000	3500	10000
BH25	0.7-0.9	Fine	800	1000	3500	10000
BH26	0-0.1	Fine	800	1000	3500	10000
BH26	0.2-0.4	Fine	800	1000	3500	10000
BH26	0.5-0.7	Fine	800	1000	3500	10000
BH26 - [LAB_DUP]	0.5-0.7	Fine	800	1000	3500	10000
BH27	0-0.1	Fine	800	1000	3500	10000
BH27 - [LAB_DUP]	0-0.1	Fine	800	1000	3500	10000
BH28	0-0.1	Fine	800	1000	3500	10000
BH30	0-0.1	Fine	800	1000	3500	10000
BH30	0.4-0.6	Fine	800	1000	3500	10000
BH31	0-0.1	Fine	800	1000	3500	10000
BH33	0-0.1	Fine	800	1000	3500	10000
SDUP1	BH24 0-0.1	Fine	800	1000	3500	10000
SDUP2	BH29 0-0.1	Fine	800	1000	3500	10000
SDUP3	BH34 0-0.1	Fine	800	1000	3500	10000
SDUP4	BH15 0-0.1	Fine	800	1000	3500	10000
SDUP5	BH3 0-0.1	Fine	800	1000	3500	10000
SDUP5 - [LAB_DUP]	BH3 0-0.1	Fine	800	1000	3500	10000
SDUP6	BH17 0-0.1	Fine	800	1000	3500	10000
SDUP7	BH22 0-0.1	Fine	800	1000	3500	10000
BH201	0-0.2	Fine	800	1000	3500	10000
BH201 - [LAB_DUP]	0-0.2	Fine	800	1000	3500	10000
BH201	0.8-1	Fine	800	1000	3500	10000
BH202	0-0.2	Fine	800	1000	3500	10000
BH202	1-1.2	Fine	800	1000	3500	10000
BH203	0-0.2	Fine	800	1000	3500	10000
BH203	0.8-1	Fine	800	1000	3500	10000
BH204	0-0.2	Fine	800	1000	3500	10000
BH204	1.7-1.8	Fine	800	1000	3500	10000
BH205	0-0.2	Fine	800	1000	3500	10000
BH205 - [LAB_DUP]	0-0.2	Fine	800	1000	3500	10000
BH205	0.8-1	Fine	800	1000	3500	10000
BH206	0-0.4	Fine	800	1000	3500	10000
BH207	0-0.4	Fine	800	1000	3500	10000
BH208	0.1-0.3	Fine	800	1000	3500	10000
BH208	0.7-1	Fine	800	1000	3500	10000
BH209	0-0.3	Fine	800	1000	3500	10000
BH210	0.1-0.3	Fine	800	1000	3500	10000
BH210	1-1.3	Fine	800	1000	3500	10000
BH211	0-0.2	Fine	800	1000	3500	10000
BH212	0-0.3	Fine	800	1000	3500	10000
BH212 - [LAB_DUP]	0-0.3	Fine	800	1000	3500	10000
BH213	0-0.2	Fine	800	1000	3500	10000
BH213	0.4-0.6	Fine	800	1000	3500	10000
BH214	0-0.2	Fine	800	1000	3500	10000
BH215	0-0.2	Fine	800	1000	3500	10000
BH215	0.4-0.6	Fine	800	1000	3500	10000
BH216	0-0.2	Fine	800	1000	3500	10000
BH216	1.1-1.3	Fine	800	1000	3500	10000
BH217	0.1-0.3	Fine	800	1000	3500	10000
BH217	0.7-1	Fine	800	1000	3500	10000
BH218	0-0.2	Fine	800	1000	3500	10000
BH219	0-0.2	Fine	800	1000	3500	10000
BH219 - [LAB_DUP]	0-0.2	Fine	800	1000	3500	10000
BH219	1.1-1.3	Fine	800	1000	3500	10000
BH220	0-0.2	Fine	800	1000	3500	10000
BH221	0-0.1	Fine	800	1000	3500	10000
BH221 - [LAB_DUP]	0-0.1	Fine	800	1000	3500	10000
BH221	0.4-0.55	Fine	800	1000	3500	10000
BH222	0-0.1	Fine	800	1000	3500	10000
BH223	0-0.1	Fine	800	1000	3500	10000
BH223	0.3-0.4	Fine	800	1000	3500	10000
BH223	1.0-1.2	Coarse	700	1000	2500	10000
BH224	0-0.1	Coarse	700	1000	2500	10000
BH224	0.3-0.5	Fine	800	1000	3500	10000
BH224	0.75-0.95	Fine	800	1000	3500	10000
S DUP 1	BH205 0-0.1	Fine	800	1000	3500	10000
S DUP 2	BH201 0-0.1	Fine	800	1000	3500	10000
S DUP 3	BH202 0-0.1	Fine	800	1000	3500	10000
S DUP 4	BH203 0-0.1	Fine	800	1000	3500	10000
S DUP 5	BH219 0-0.1	Fine	800	1000	3500	10000
S DUP 6	BH215 0-0.1	Fine	800	1000	3500	10000
SDUP201	BH222 0-0.2	Fine	800	1000	3500	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	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH1 - [LAB_DUP]	0-0.1	<25	<50	**100**	<100	<0.2	<0.5	<1	<1	<1	0
BH1	0.2-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH1 - [LAB_DUP]	0.2-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH2	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH2	0.2-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH3	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH3	0.2-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH4	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH5	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH5	0.8-1.0	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH6	0.05-0.15	<25	<50	**110**	**190**	<0.2	<0.5	<1	<1	<1	0
BH7	0-0.1	<25	<50	**150**	<100	<0.2	<0.5	<1	<1	<1	0
BH7	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH11	0.05-0.15	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH11	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH11	1.3-1.5	<25	<50	**220**	<100	<0.2	<0.5	<1	<1	<1	0
BH11	2.3-2.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH12	0-0.1	<25	<50	**110**	<100	<0.2	<0.5	<1	<1	<1	0
BH12	0.2-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH13	0-0.1	<25	<50	**130**	<100	<0.2	<0.5	<1	<1	<1	0
BH13	1.0-1.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH14	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH15	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH15	0.4-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH16	0-0.1	<25	<50	**160**	<100	<0.2	<0.5	<1	<1	<1	0
BH17	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH18	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH18	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH18	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**3.2**
BH18 - [LAB_DUP]	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**3.2**
BH19	0-0.1	<25	<50	**110**	<100	<0.2	<0.5	<1	<1	<1	0
BH20	0-0.1	<25	<50	**100**	<100	<0.2	<0.5	<1	<1	<1	0
BH20	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH21	0-0.1	<25	<50	**140**	<100	<0.2	<0.5	<1	<1	<1	0
BH22	0-0.1	<25	<50	**140**	<100	<0.2	<0.5	<1	<1	<1	0
BH23	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH24	0-0.1	<25	<50	**160**	<100	<0.2	<0.5	<1	<1	<1	0
BH25	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH25	0.7-0.9	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH26	0-0.1	<25	<50	**140**	**190**	<0.2	<0.5	<1	<1	<1	0
BH26	0.2-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH26	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH26 - [LAB_DUP]	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH27	0-0.1	<25	<50	**100**	<100	<0.2	<0.5	<1	<1	<1	0
BH27 - [LAB_DUP]	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH28	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH30	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH30	0.4-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH31	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH33	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
SDUP1	BH24 0-0.1	<25	<50	**140**	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP4	BH15 0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP5	BH3 0-0.1	<25	<50	**100**	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP5 - [LAB_DUP]	BH3 0-0.1	<25	<50	**110**	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP6	BH17 0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
SDUP7	BH22 0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	NA
BH201	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.5**
BH201 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.5**
BH201	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1**
BH202	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1**
BH202	1-1.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.7**
BH203	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.9**
BH203	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.1**
BH204	0-0.2	<25	<50	**110**	<100	<0.2	<0.5	<1	<1	<1	0
BH204	1.7-1.8	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH205	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.2**
BH205 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.2**
BH205	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1**
BH206	0-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.9**
BH207	0-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH208	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH208	0.7-1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH209	0-0.3	<25	<50	**110**	<100	<0.2	<0.5	<1	<1	<1	**1.5**
BH210	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH210	1-1.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH211	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.4**
BH212	0-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.3**
BH212 - [LAB_DUP]	0-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.3**
BH213	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.1**
BH213	0.4-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
BH214	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.5**
BH215	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.8**
BH215	0.4-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.1**
BH216	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.4**
BH216	1.1-1.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.5**
BH217	0.1-0.3	<25	<50	**110**	<100	<0.2	<0.5	<1	<1	<1	0
BH217	0.7-1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH218	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**3.3**
BH219	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.3**
BH219 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.3**
BH219	1.1-1.3	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**2.4**
BH220	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**1.7**
BH221	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.1**
BH221 - [LAB_DUP]	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.1**
BH221	0.4-0.55	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH222	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.2**
BH223	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH223	0.3-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH223	1.0-1.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH224	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.3**
BH224	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	0
BH224	0.75-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	**0.1**
S DUP 1	BH205 0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	-
S DUP 2	BH201 0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	-
S DUP 3	BH202 0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	-
S DUP 4	BH203 0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	-
S DUP 5	BH219 0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	-
S DUP 6	BH215 0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	-
SDUP201	BH222 0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<1	-
Total Number of Samples		53	53	53	53	53	53	53	53	53	46
Maximum Value		<PQL	<PQL	110	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	3.3

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
Note: Total number of samples and maximum values consider only the DSI data and not the PSI data. In addition, the grey shaded samples are from the PSI 2022.

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**
27/09/2022	BH1	0-0.1	No	10	8,190	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH1	0-0.1	502.88	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
27/09/2022	BH1	0.1-0.4	NA	-	3,180	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28/09/2022	BH2	0-0.1	No	-	6,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH2	0-0.1	542.63	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
28/09/2022	BH2	0.1-0.5	NA	-	3,730	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH3	0-0.1	No	-	6,870	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH3	0-0.1	456.64	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
27/09/2022	BH3	0.1-0.2	NA	-	4,630	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH3	0.2-0.6	NA	-	4,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH4	0-0.1	No	10	11,130	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH4	0-0.1	412.24	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
27/09/2022	BH4	0.1-0.4	NA	-	2,640	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH5	0-0.1	No	10	11,020	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH5	0-0.1	592.87	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
27/09/2022	BH5	0.1-1.2	NA	-	7,260	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH6	0.02-0.2	No	-	4,280	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH6	0.05-0.15	923.34	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
27/09/2022	BH6	0.2-0.3	NA	-	3,160	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2022	BH7	0-0.1	No	10	11,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH7	0-0.1	536.82	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
29/09/2022	BH7	0.1-0.6	NA	-	6,490	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2022	BH7	0.6-1.6	NA	-	5,680	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2022	BH11	0.01-0.15	No	10	8,760	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH11	0.05-0.15	908.2	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
29/09/2022	BH11	0.15-1.6	NA	-	6,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228-A	BH11	0.7-0.9	520.53	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
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29/09/2022	BH11	1.6-1.9	NA	-	6,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2022	BH11	1.9-2.3	NA	-	3,410	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28/09/2022	BH12	0-0.1	No	10	7,780	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH12	0-0.1	549.94	Chrysotile asbestos detected: Amosite asbestos detected: Crocidolite asbestos detected: Organic fibres detected	No asbestos detected	0.3667	No visible asbestos detected	0.2017	–	0.0367	<0.001
28/09/2022	BH12	0.1-0.2	NA	-	3,210	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28/09/2022	BH12	0.2-0.3	NA	-	2,650	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228-A	BH12	0.2-0.3	835.02	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
27/09/2022	BH13	0-0.1	No	-	4,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH13	0-0.1	394.55	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
27/09/2022	BH13	0.1-0.3	NA	-	3,180	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2022	BH14	0-0.1	No	10	10,740	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH14	0-0.1	421.8	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
29/09/2022	BH14	0.1-0.6	NA	-	6,350	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH15	0-0.1	No	-	4,820	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH15	0-0.1	491.69	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
27/09/2022	BH15	0.1-0.2	NA	-	2,180	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH15	0.2-0.3	NA	-	1,360	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28/09/2022	BH16	0-0.1	No	-	6,920	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH16	0-0.1	592.75	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
28/09/2022	BH16	0.1-0.8	NA	-	3,410	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH17	0-0.1	No	-	5,750	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH17	0-0.1	377.16	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
27/09/2022	BH17	0.1-0.5	NA	-	4,180	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH17	0.5-1.5	NA	-	7,280	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH18	0-0.1	No	10	9,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH18	0-0.1	424.39	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
27/09/2022	BH18	0.1-0.2	NA	-	2,020	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH18	0.1-0.2	538.39	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
27/09/2022	BH18	0.2-0.5	NA	-	1,350	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25/09/2022	BH19	0-0.1	No	10	9,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH19	0-0.1	466.22	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
28/09/2022	BH19	0.1-0.2	NA	-	4,180	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28/09/2022	BH19	0.2-0.5	NA	-	4,380	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28/09/2022	BH20	0-0.1	No	-	7,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH20	0-0.1	447.81	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
28/09/2022	BH20	0.1-1.2	NA	-	3,180	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228-A	BH20	0.7-0.9	412.22	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
28/09/2022	BH21	0-0.1	No	10	9,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH21	0-0.1	534.06	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
28/09/2022	BH21	0.1-0.7	NA	-	4,660	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH22	0-0.1	No	-	7,710	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH22	0-0.1	495.84	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
27/09/2022	BH22	0.1-1.2	NA	-	7,920	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28/09/2022	BH23	0-0.2	No	10	13,410	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH23	0-0.1	1030.02	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
26/09/2022	BH24	0-0.1	No	-	4,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH24	0-0.1	552.13	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
26/09/2022	BH24	0.1-1.6	NA	-	3,320	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH25	0-0.1	No	-	4,360	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH25	0-0.1	379.98	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
27/09/2022	BH25	0.1-0.3	NA	-	2,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	307228	BH25	0.7-0.9	376.86	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
26/09/2022	BH26	0-0.15	No	10	10,420	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH26	0-0.1	744.71	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected	<0.1	No visible asbestos detected	–	–	<0.01	<0.001
26/09/2022	BH26	0.15-0.4	NA	-	7,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228-A	BH26	0.2-0.4	424.07	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
28/09/2022	BH27	0-0.1	No	10	9,460	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH27	0-0.1	437.8	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
28/09/2022	BH27	0.1-0.5	NA	-	4,830	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26/09/2022	BH28	0-0.1	No	-	3480	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH28	0-0.1	321.64	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
26/09/2022	BH28	0.1-0.5	NA	-	2190	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26/09/2022	BH28	0.6-1.3	NA	-	3670	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2022	BH30	0-0.1	No	10	9,890	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH30	0-0.1	699.46	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
29/09/2022	BH30	0.1-0.3	NA	-	3,280	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
29/09/2022	BH30	0.3-0.4	NA	-	1,230	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
28/09/2022	BH31	0-0.1	No	10	8,920	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH31	0-0.1	641.31	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
28/09/2022	BH31	0.1-1.0	NA	-	6,280	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
27/09/2022	BH33	0-0.1	No	-	7,910	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	307228	BH33	0-0.1	553.67	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
27/09/2022	BH33	0.1-0.3	NA	-	3,180	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/08/2023	BH201	0-0.1	No	10	10,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/08/2023	BH201	0.1-1.0	NA	10	11,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH201	0.4-0.6	625.91	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
1/08/2023	BH202	0-0.1	No	10	10,330	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH202	0-0.2	587.98	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
1/08/2023	BH202	0.1-0.6	NA	15	15,510	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661-A	BH202	0.4-0.6	471.15	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
1/08/2023	BH203	0-0.1	No	10	10,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH203	0-0.2	558.3	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
1/08/2023	BH203	0.1-0.6	NA	10	10,710	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31/07/2023	BH204	0-0.1	No	10	10,610	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH204	0-0.2	466.08	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
31/07/2023	BH204	0.1-1.0	NA	5	4,070	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/08/2023	BH205	0-0.1	No	10	10,160	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH205	0-0.2	486.49	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
1/08/2023	BH205	0.1-1.1	NA	10	10,470	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2/08/2023	BH206	0-0.4	No	5	5,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH206	0-0.4	488.77	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
31/07/2023	BH207	0-0.1	No	5	4,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH207	0-0.4	575.88	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
31/07/2023	BH207	0.1-0.5	NA	7	7,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31/07/2023	BH208	0.1-0.3	NA	5	4,620	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH208	0.1-0.3	372.79	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
2/08/2023	BH209	0-0.3	No	7	6,910	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH209	0-0.3	545.17	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
31/07/2023	BH210	0.1-0.3	NA	2	2,160	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31/07/2023	BH210	0.3-1.0	NA	7	6,740	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH210	0.7-1	429.96	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
2/08/2023	BH211	0-0.2	No	10	12,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH211	0-0.2	669.09	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
2/08/2023	BH212	0-0.3	No	5	5,110	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH212	0-0.3	704.95	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
2/08/2023	BH213	0-0.1	No	10	11,910	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH213	0-0.2	537.41	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
2/08/2023	BH213	0.1-0.8	NA	10	11,150	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2/08/2023	BH214	0-0.1	No	10	10,220	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH214	0-0.2	454.61	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
2/08/2023	BH214	0.1-0.8	NA	10	10,910	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2/08/2023	BH215	0-0.1	No	10	10,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH215	0-0.2	587	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
2/08/2023	BH215	0.1-0.7	NA	10	11,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/08/2023	BH216	0-0.1	No	10	10,210	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH216	0-0.2	502.82	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
1/08/2023	BH216	0.1-0.7	NA	10	11,370	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
31/07/2023	BH217	0.1-0.7	NA	2	1,910	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH217	0.1-0.3	284.45	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
31/07/2023	BH217	0.7-1.1	NA	6	6,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/08/2023	BH218	0-0.1	No	10	9,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH218	0-0.2	479.5	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
1/08/2023	BH218	0.1-0.6	NA	10	10,330	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/08/2023	BH219	0-0.1	No	10	8,710	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH219	0-0.2	556.66	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
1/08/2023	BH219	0.1-1.3	NA	10	11,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1/08/2023	BH220	0-0.1	No	10	10,290	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	329661	BH220	0-0.2	619.48	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
1/08/2023	BH220	0.1-0.6	NA	10	11,250	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15/08/2023	BH221	0-0.1	No	10	8,970	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	330588	BH221	0.4-0.55	491.21	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
15/08/2023	BH222	0-0.1	No	10	8,760	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	330588-A	BH222	0-0.1	456.07	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
14/08/2023	BH223	0-0.1	No	10	9,250	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14/08/2023	BH223	0.15-0.4	NA	5	4,750	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	330588	BH223	0.3-0.4	376.81	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
14/08/2023	BH223	0.7-1.0	NA	3	3,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14/08/2023	BH223	1.7-2.0	NA	3	2,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14/08/2023	BH223	2.5-3.0	NA	7	7,010	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
14/08/2023	BH224	0-0.1	No	10	11,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	330588	BH224	0-0.1	900.57	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
14/08/2023	BH224	0.1-0.5	NA	7	7,270	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	330588-A	BH224	0.3-0.5	695.77	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

Concentration above the SAC **VALUE**
Note: Total number of samples and maximum values consider only the DSI data and not the PSI data. In addition, the grey shaded samples are from the PSI 2022.

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	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	<4	14	93	23	9	85	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH1 - [LAB_DUP]	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	<4	14	99	24	9	160	<1	<0.1	<25	<50	100	<100	<0.2	<0.5	<1	<1	<0.05
BH1 - [TRIPLICATE]	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	<4	14	100	22	8	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	0.2-0.4	F: Silty clay	Fine	8.62	23.2	NA	<4	12	100	17	8	73	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH1 - [LAB_DUP]	0.2-0.4	F: Silty clay	Fine	NA	NA	NA	<4	9	64	15	7	59	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH1 - [TRIPLICATE]	0.2-0.4	F: Silty clay	Fine	NA	NA	NA	<4	8	59	12	6	41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	12	52	18	7	76	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH2	0.2-0.4	F: Silty clay	Fine	NA	NA	NA	<8	8	56	3	6	11	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH3	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	<4	21	96	29	9	99	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH3	0.2-0.4	F: Silty clay	Fine	8.62	23.2	NA	<4	9	100	12	10	49	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH4	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	<4	22	87	24	10	76	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH5	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	<4	12	100	9	9	44	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH5	0.8-1.0	F: Silty clay	Fine	8.62	23.2	NA	<4	20	84	17	10	52	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH6	0.05-0.15	F: Sandy gravel	Fine	8.62	23.2	NA	<4	10	92	4	6	24	<1	<0.1	<25	<50	110	190	<0.2	<0.5	<1	<1	<0.05
BH7	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	20	67	18	8	74	<1	<0.1	<25	<50	150	<100	<0.2	<0.5	<1	<1	<0.05
BH7	0.6-0.8	F: Silty clay	Fine	NA	NA	NA	<4	7	47	4	4	8	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH11	0.05-0.15	F: Sandy gravel	Fine	8.62	23.2	NA	<4	8	160	4	6	33	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH11	0.7-0.9	F: Silty clay	Fine	NA	NA	NA	<4	6	73	4	9	21	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH11	1.3-1.5	F: Silty clay	Fine	NA	NA	NA	<4	20	69	7	6	26	<1	<0.1	<25	<50	220	<100	<0.2	<0.5	<1	<1	<0.05
BH11	2.3-2.5	Silty sandy clay	Fine	NA	NA	NA	<4	4	53	6	11	32	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH12	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	16	57	21	12	69	<1	<0.1	<25	<50	110	<100	<0.2	<0.5	<1	<1	<0.05
BH12	0.2-0.3	F: silty sandy clay	Fine	NA	NA	NA	<4	6	58	8	11	23	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH13	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	14	52	54	11	140	<1	<0.1	<25	<50	130	<100	<0.2	<0.5	<1	<1	<0.05
BH13	1.0-1.2	F: silty sandy clay	Fine	NA	NA	NA	<4	4	55	2	8	12	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH14	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	19	68	15	12	36	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH15	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	12	72	24	7	73	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH15	0.4-0.6	F: Silty clay	Fine	8.62	23.2	NA	<4	15	98	66	11	150	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH16	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	19	53	17	6	47	<1	<0.1	<25	<50	160	<100	<0.2	<0.5	<1	<1	<0.05
BH17	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	21	69	38	8	88	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH18	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	17	48	21	12	59	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH18	0.1-0.2	F: Sandy gravel	Fine	NA	NA	NA	<4	6	36	4	9	20	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH18	0.1-0.2	F: Sandy gravel	Fine	NA	NA	NA	<4	6	19	3	10	11	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH18 - [LAB_DUP]	0.1-0.2	F: Sandy gravel	Fine	NA	NA	NA	<4	5	18	3	9	12	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH19	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	<4	15	91	33	8	100	<1	<0.1	<25	<50	110	<100	<0.2	<0.5	<1	<1	<0.05
BH20	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	12	50	21	9	73	<1	<0.1	<25	<50	100	<100	<0.2	<0.5	<1	<1	<0.05
BH20	0.7-0.9	F: Silty clay	Fine	NA	NA	NA	<4	5	35	3	4	8	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH21	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	18	72	28	9	79	<1	<0.1	<25	<50	140	<100	<0.2	<0.5	<1	<1	<0.05
BH22	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	<4	20	82	35	8	91	<1	<0.1	<25	<50	140	<100	<0.2	<0.5	<1	<1	<0.05
BH23	0-0.1	F: Sandy gravel	Fine	NA	NA	NA	6	13	19	8	13	42	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH24	0-0.1	F: Silty sand	Fine	NA	NA	NA	<4	18	58	20	8	67	<1	<0.1	<25	<50	160	<100	<0.2	<0.5	<1	<1	<0.05
BH25	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	22	76	33	8	89	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH25	0.7-0.9	Silty sandy clay	Fine	8.62	23.2	NA	<4	12	140	4	11	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH26	0-0.1	F: Sandy gravel	Fine	NA	NA	NA	<4	5	16	3	2	24	<1	<0.1	<25	<50	140	190	<0.2	<0.5	<1	<1	<0.05
BH26	0.2-0.4	F: Silty clay	Fine	NA	NA	NA	<4	11	70	21	11	94	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH26	0.5-0.7	Silty sandy clay	Fine	8.62	23.2	NA	<4	9	110	7	12	35	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH26 - [LAB_DUP]	0.5-0.7	Silty sandy clay	Fine	8.62	23.2	NA	<4	8	120	8	13	33	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH27	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	17	49	21	6	48	<1	<0.1	<25	<50	100	<100	<0.2	<0.5	<1	<1	<0.05
BH27 - [LAB_DUP]	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	17	46	21	6	44	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH28	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	19	64	26	7	67	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH30	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	6	14	130	29	7	87	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH30	0.4-0.6	Silty sandy clay	Fine	8.62	23.2	NA	<4	28	82	6	19	49	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH31	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	15	58	16	8	59	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH33	0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	15	45	18	9	52	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP1	BH24 0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	26	67	17	10	95	<1	<0.1	<25	<50	140	<100	<0.2	<0.5	<1	<1	<0.05
SDUP1	BH24 0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	25	64	18	11	90	NA	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP4	BH15 0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	12	50	23	7	57	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP5	BH3 0-0.1	F: Silty clay	Fine	8.62	23.2	NA	<4	26	100	23	10	140	<1	<0.1	<25	<50	100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP5 - [LAB_DUP]	BH3 0-0.1	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	<25	<50	110	<100	<0.2	<0.5	<1	<1	NA
SDUP6	BH17 0-0.1	F: Silty clay	Fine	NA	NA	NA	<4	22	71	39	8	90	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP7	BH22 0-0.1	F: Silty clay	Fine	8.62	23.2	NA	4	28	100	33	10	120	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH201	0-0.2	F: Silty Clay	Fine	8.65	35	26	<4	19	100	24	11	84	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH201 - [LAB_DUP]	0-0.2	F: Silty Clay	Fine	8.65	35	26	<4	23	110	31	12	96	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH201	0.8-1	F: Silty Sandy Clay	Fine	8.65	35	26	<4	17	110	19	13	56	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH202	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	<4	35	110	18	16	61	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH202	1-1.2	Silty Sandy Clay	Fine	7.4	27.67	NA	<4	27	130	5	12	48	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH203	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	<4	29	84	32	13	89	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH203	0.8-1	Silty Clay	Fine	7.4	27.67	NA	<4	22	74	8	8	17	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH204	0-0.2	F: Silty Clay	Fine	8.65	35	26	5	10	60	18	8	63	<1	NA	<25	<50	110	<100	<0.2	<0.5	<1	<1	<0.05
BH204	1.7-1.8	F: Silty Sandy Clay	Fine	8.65	35	26	<4	9	85	4	14	21	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH205	0-0.2	F: Silty Clay	Fine	8.65	35	26	4	10	30	15	12	40	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH205 - [LAB_DUP]	0-0.2	F: Silty Clay	Fine	8.65	35	26	<4	10	28	15	13	38	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH205	0.8-1	F: Silty Clay	Fine	8.65	35	26	<4	12	79	12	11	35	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH206	0-0.4	F: Silty Sandy Clay	Fine	8.65	35	26	5	21	97	38	12	180	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH207	0-0.4	F: Silty Clay	Fine	8.65	35	26	<4	22	77	35	9	120	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH208	0.1-0.3	F: Silty Clay	Fine	8.65	35	26	<4	19	71	11	7	33	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH208	0.7-1	Silty Sandy Clay	Fine	7.4	27.67	NA	<4	17	87	6	8	19	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH209	0-0.3	F: Silty Clay	Fine	8.65	35	26	6	16	67	34	13	150	<1	NA	<25	<50	110	<100	<0.2	<0.5	<1	<1	<0.05
BH210	0.1-0.3	F: Silty Clay	Fine	8.65	35	26	<4	3	27	12	6	28	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	0.05
BH210	1-1.3	F: Gravelly Clay	Fine	8.65	35	26	<4	8	56	18	10	34	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH211	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	<4	29	97	23	13	77	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH212	0-0.3	F: Silty Sandy Clay	Fine	8.65	35	26	<4	9	24	12	3	57	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH212 - [LAB_DUP]	0-0.3	F: Silty Sandy Clay	Fine	8.65	35	26	4	9	24	12	4	62	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH213	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	<4	27	140	29	13	98	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH213	0.4-0.6	F: Silty Sandy Clay	Fine	8.65	35	26	<4	<1	9	<1	<1	<1	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH214	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	<4	23	84	15	11	60	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH215	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	4	10	34	19	9	56	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH215	0.4-0.6	F: Silty Sandy Clay	Fine	8.65	35	26	<4	<1	2	<1	<1	2	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH216	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	<4	18	110	13	10	53	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH216	1.1-1.3	Silty Sandy Clay	Fine	7.4	27.67	NA	<4	13	98	14	11	44	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH217	0.1-0.3	F: Silty Clay	Fine	8.65	35	26	12	3	44	16	19	39	<1	NA	<25	<50	110	<100	<0.2	<0.5	<1	<1	0.05
BH217	0.7-1	F: Silty Clay	Fine	8.65	35	26	<4	<1	4	<1	<1	2	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH218	0-0.2	F: Silty Clay	Fine	8.65	35	26	<4	27	120	15	13	54	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH219	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	<4	27	110	41	10	100	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH219 - [LAB_DUP]	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	<4	25	100	44	10	110	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH219	1.1-1.3	F: Silty Sandy Clay	Fine	8.65	35	26	<4	5	40	3	4	16	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH220	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	<4	15	57	21	8	68	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH221	0-0.1	F: Sandy silty clay	Fine	8.65	35	26	<4	19	57	21	12	65	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH221 - [LAB_DUP]	0-0.1	F: Sandy silty clay	Fine	8.65	35	26	5	14	40	25	12	65	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH221	0.4-0.55	F: Silty clay	Fine	8.65	35	26	<4	20	93	28	12	160	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH222	0-0.1	F: Silty clay	Fine	8.65	35	26	<4	26	84	37	12	120	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH223	0-0.1	F: Silty clay	Fine	8.65	35	26	<4	17	60	19	7	100	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH223	0.3-0.4	F: Silty clay	Fine	8.65	35	26	<4	17	76	20	9	81	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH223	1.0-1.2	F: clayey sand	Coarse	NA	NA	NA	<4	10	73	2	11	32	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH224	0-0.1	F: sandy gravel	Coarse	NA	NA	NA	7	14	22	10	13	47	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH224	0.3-0.5	F: gravelly clay	Fine	8.65	35	26	7	16	27	10	17	53	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
BH224	0.75-0.95	Sandy silty clay	Fine	7.4	27.67	NA	<4	20	64	14	7	27	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
S DUP 1	BH205 0-0.1	Fill	Fine	8.65	35	26	5	11	32	19	12	49	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
S DUP 2	BH201 0-0.1	Fill	Fine	8.65	35	26	<4	17	110	30	11	79	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
S DUP 3	BH202 0-0.1	Fill	Fine	8.65	35	26	<4	22	79	13	13	52	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
S DUP 4	BH203 0-0.1	Fill	Fine	8.65	35	26	<4	32	88	33	13	95	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
S DUP 5	BH219 0-0.1	Fill	Fine	8.65	35	26	<4	27	97	28	10	77	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
S DUP 6	BH215 0-0.1	Fill	Fine	8.65	35	26	<4	10	33	17	7	53	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
SDUP201	BH222 0-0.2	Fill	Fine	8.65	35	26	<4	21	95	16	9	56	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<0.05
Total Number of Samples				52	52	47	50	50	50	50	50	50	50	26	50	50	50	50	50	50	50	50	50
Maximum Value				8.65	35	26	12	35	140	44	19	180	<PQL	<PQL	<PQL	<PQL	110	<PQL	<PQL	<PQL	<PQL	<PQL	0.05

Concentration above the SAC — VALUE
Concentration above the PQL — **Bold**
The guideline corresponding to the elevated value is highlighted in dark grey in the EIL and ESL Assessment Criteria Table below
Note: Total number of samples and maximum values consider only the DSI data and not the PSI data. In addition, the grey shaded samples are from the PSI 2022.

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	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH1 - [LAB_DUP]	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH1 - [TRIPLICATE]	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	--	--	--	--	--	--	--	--	--	--	--
BH1	0.2-0.4	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
BH1 - [LAB_DUP]	0.2-0.4	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH1 - [TRIPLICATE]	0.2-0.4	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	--	--	--	--	--	--	--	--	--	--	--
BH2	0-0.1	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	0.2-0.4	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH3	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH3	0.2-0.4	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
BH4	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH5	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH5	0.8-1.0	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
BH6	0.05-0.15	F: Sandy gravel	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH7	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH7	0.6-0.8	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH11	0.05-0.15	F: Sandy gravel	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH11	0.7-0.9	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH11	1.3-1.5	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH11	2.3-2.5	Silty sandy clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH12	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH12	0.2-0.3	F: silty sandy clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH13	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH13	1.0-1.2	F: silty sandy clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH14	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH15	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH15	0.4-0.6	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
BH16	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH17	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH18	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH18	0.1-0.2	F: Sandy gravel	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH18	0.1-0.2	F: Sandy gravel	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH18 - [LAB_DUP]	0.1-0.2	F: Sandy gravel	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH19	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH20	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH20	0.7-0.9	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH21	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH22	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH23	0-0.1	F: Sandy gravel	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH24	0-0.1	F: Silty sand	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH25	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH25	0.7-0.9	Silty sandy clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH26	0-0.1	F: Sandy gravel	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH26	0.2-0.4	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH26	0.5-0.7	Silty sandy clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH26 - [LAB_DUP]	0.5-0.7	Silty sandy clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH27	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH27 - [LAB_DUP]	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH28	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH30	0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH30	0.4-0.6	Silty sandy clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
BH31	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
BH33	0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
SDUP1	BH24 0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
SDUP1	BH24 0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	--	180	--	--	--	--	--	--	--	--	20
SDUP4	BH15 0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
SDUP5	BH3 0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
SDUP5 - [LAB_DUP]	BH3 0-0.1	F: Silty clay	Fine	NA	NA	NA	--	--	--	--	--	--	170	--	180	120	1300	5600	65	105	125	45	--
SDUP6	BH17 0-0.1	F: Silty clay	Fine	NA	NA	NA	100	200	80	1200	35	150	170	180	180	120	1300	5600	65	105	125	45	20
SDUP7	BH22 0-0.1	F: Silty clay	Fine	8.62	23.2	NA	100	200	240	1200	360	1000	170	180	180	120	1300	5600	65	105	125	45	20
BH201	0-0.2	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH201 - [LAB_DUP]	0-0.2	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH201	0.8-1	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH202	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH202	1-1.2	Silty Sandy Clay	Fine	7.4	27.67	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
BH203	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH203	0.8-1	Silty Clay	Fine	7.4	27.67	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
BH204	0-0.2	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH204	1.7-1.8	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH205	0-0.2	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH205 - [LAB_DUP]	0-0.2	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH205	0.8-1	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH206	0-0.4	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH207	0-0.4	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH208	0.1-0.3	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH208	0.7-1	Silty Sandy Clay	Fine	7.4	27.67	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
BH209	0-0.3	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH210	0.1-0.3	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH210	1-1.3	F: Gravelly Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH211	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH212	0-0.3	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH212 - [LAB_DUP]	0-0.3	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH213	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH213	0.4-0.6	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH214	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH215	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH215	0.4-0.6	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH216	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH216	1.1-1.3	Silty Sandy Clay	Fine	7.4	27.67	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
BH217	0.1-0.3	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH217	0.7-1	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH218	0-0.2	F: Silty Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH219	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH219 - [LAB_DUP]	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH219	1.1-1.3	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH220	0-0.2	F: Silty Sandy Clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH221	0-0.1	F: Sandy silty clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH221 - [LAB_DUP]	0-0.1	F: Sandy silty clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH221	0.4-0.55	F: Silty clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH222	0-0.1	F: Silty clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
BH223	0-0.1	F: Silty clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH223	0.3-0.4	F: Silty clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH223	1.0-1.2	F: clayey sand	Coarse	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	1300	5600	65	105	125	45	20
BH224	0-0.1	F: sandy gravel	Coarse	NA	NA	NA	100	200	80	1200	35	150	170	--	180	120	300	2800	50	85	70	105	20
BH224	0.3-0.5	F: gravelly clay	Fine	8.65	35	26	100	410	240	1200	420	1300	170	--	180	120	1300	5600	65	105	125	45	20
BH224	0.75-0.95	Sandy silty clay	Fine	7.4	27.67	NA	100	200	240	1200	360	1000	170	--	180	120	1300	5600	65	105	125	45	20
S DUP 1	BH205 0-0.1	Fill	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
S DUP 2	BH201 0-0.1	Fill	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
S DUP 3	BH202 0-0.1	Fill	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
S DUP 4	BH203 0-0.1	Fill	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
S DUP 5	BH219 0-0.1	Fill	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
S DUP 6	BH215 0-0.1	Fill	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	20
SDUP201	BH222 0-0.2	Fill	Fine	8.65	35	26	100	410	240	1200	420	1300	170	180	180	120	1300	5600	65	105	125	45	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**																									
BH1	0-0.1	F: Silty clay	<4	<0.4	14	93	23	0.1	9	85	<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
BH1 - [LAB_DUP]	0-0.1	F: Silty clay	<4	<0.4	14	99	24	0.2	9	160	<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
BH1 - [TRIPLICATE]	0-0.1	F: Silty clay	<4	<0.4	14	100	22	0.2	8	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH1	0.2-0.4	F: Silty clay	<4	<0.4	12	100	17	<0.1	8	73	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH1 - [LAB_DUP]	0.2-0.4	F: Silty clay	<4	<0.4	9	64	15	<0.1	7	59	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH1 - [TRIPLICATE]	0.2-0.4	F: Silty clay	<4	<0.4	8	59	12	<0.1	6	41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0-0.1	F: Silty clay	<4	<0.4	12	52	18	<0.1	7	76	<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	0.2-0.4	F: Silty clay	<8	<0.4	8	56	3	<0.1	6	11	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH3	0-0.1	F: Silty clay	<4	<0.4	21	96	29	<0.1	9	99	<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	0.2-0.4	F: Silty clay	<4	<0.4	9	100	12	<0.1	10	49	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH4	0-0.1	F: Silty clay	<4	<0.4	22	87	24	<0.1	10	76	<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	0-0.1	F: Silty clay	<4	<0.4	12	100	9	<0.1	9	44	<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	0.8-1.0	F: Silty clay	<4	<0.4	20	84	17	<0.1	10	52	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH6	0.05-0.15	F: Sandy gravel	<4	<0.4	10	92	4	<0.1	6	24	0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	120	120	<0.2	<0.5	<1	<1	Not Detected
BH7	0-0.1	F: Silty clay	<4	<0.4	20	67	18	<0.1	8	74	<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
BH7	0.6-0.8	F: Silty clay	<4	<0.4	7	47	4	<0.1	4	8	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH11	0.05-0.15	F: Sandy gravel	<4	<0.4	8	160	4	<0.1	6	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
BH11	0.7-0.9	F: Silty clay	<4	<0.4	6	73	4	<0.1	9	21	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH11	1.3-1.5	F: Silty clay	<4	<0.4	20	69	7	<0.1	6	26	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	180	<100	180	<0.2	<0.5	<1	<1	Not Detected
BH11	2.3-2.5	Silty sandy clay	<4	<0.4	4	53	6	<0.1	11	32	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH12	0-0.1	F: Silty clay	<4	<0.4	16	57	21	<0.1	12	69	<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	Detected
BH12	0.2-0.3	F: silty sandy clay	<4	<0.4	6	58	8	<0.1	11	23	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH13	0-0.1	F: Silty clay	<4	<0.4	14	52	54	<0.1	11	140	<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
BH13	1.0-1.2	F: silty sandy clay	<4	<0.4	4	55	2	<0.1	8	12	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH14	0-0.1	F: Silty clay	<4	<0.4	19	68	15	<0.1	12	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
BH15	0-0.1	F: Silty clay	<4	<0.4	12	72	24	<0.1	7	73	<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
BH15	0.4-0.6	F: Silty clay	<4	<0.4	15	98	66	<0.1	11	150	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH16	0-0.1	F: Silty clay	<4	<0.4	19	53	17	<0.1	6	47	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	100	100	<0.2	<0.5	<1	<1	Not Detected
BH17	0-0.1	F: Silty clay	<4	<0.4	21	69	38	<0.1	8	88	<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
BH18	0-0.1	F: Silty clay	<4	<0.4	17	48	21	<0.1	12	59	<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
BH18	0.1-0.2	F: Sandy gravel	<4	<0.4	6	36	4	<0.1	9	20	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH18	0.1-0.2	F: Sandy gravel	<4	<0.4	6	19	3	<0.1	10	11	<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
BH18 - [LAB_DUP]	0.1-0.2	F: Sandy gravel	<4	<0.4	5	18	3	<0.1	9	12	<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
BH19	0-0.1	F: Silty clay	<4	0.9	15	91	33	<0.1	8	100	<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
BH20	0-0.1	F: Silty clay	<4	<0.4	12	50	21	<0.1	9	73	<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
BH20	0.7-0.9	F: Silty clay	<4	<0.4	5	35	3	<0.1	4	8	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH21	0-0.1	F: Silty clay	<4	<0.4	18	72	28	<0.1	9	79	<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
BH22	0-0.1	F: Silty clay	<4	<0.4	20	82	35	<0.1	8	91	<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
BH23	0-0.1	F: Sandy gravel	6	<0.4	13	19	8	<0.1	13	42	<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
BH24	0-0.1	F: Silty sand	<4	<0.4	18	58	20	<0.1	8	67	<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
BH25	0-0.1	F: Silty clay	<4	<0.4	22	76	33	<0.1	8	89	<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
BH25	0.7-0.9	Silty sandy clay	<4	<0.4	12	140	4	<0.1	11	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
BH26	0-0.1	F: Sandy gravel	<4	<0.4	5	16	3	<0.1	2	24	0.2	<0.05	<0.1	<0.1	<0.1	0.2	<0.1	<25	<50	<100	140	140	<0.2	<0.5	<1	<1	Not Detected
BH26-FCF1-Surface	Surface	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH26	0.2-0.4	F: Silty clay	<4	<0.4	11	70	21	<0.1	11	94	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH26	0.5-0.7	Silty sandy clay	<4	<0.4	9	110	7	<0.1	12	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
BH26 - [LAB_DUP]	0.5-0.7	Silty sandy clay	<4	<0.4	8	120	8	<0.1	13	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
BH27	0-0.1	F: Silty clay	<4	<0.4	17	49	21	<0.1	6	48	<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
BH27 - [LAB_DUP]	0-0.1	F: Silty clay	<4	<0.4	17	46	21	<0.1	6	44	<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
BH28	0-0.1	F: Silty clay	<4	<0.4	19	64	26	<0.1	7	67	<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
BH30	0-0.1	F: Silty clay	6	<0.4	14	130	29	0.2	7	87	<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
BH30	0.4-0.6	Silty sandy clay	<4	<0.4	28	82	6	<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
BH31	0-0.1	F: Silty clay	<4	<0.4	15	58	16	<0.1	8	59	<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
BH33	0-0.1	F: Silty clay	<4	<0.4	15	45	18	<0.1	9	52	<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	BH24 0-0.1	F: Silty clay	<4	<0.4	26	67	17	<0.1	10	95	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	140	140	<0.2	<0.5	<1	<1	NA
SDUP1	BH24 0-0.1	F: Silty clay	<4	<0.4	25	64	18	<0.1	11	90	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP4	BH15 0-0.1	F: Silty clay	<4	<0.4	12	50	23	<0.1	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
SDUP5	BH3 0-0.1	F: Silty clay	<4	<0.4	26	100	23	<0.1	10	140	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP5 - [LAB_DUP]	BH3 0-0.1	F: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDUP6	BH17 0-0.1	F: Silty clay	<4	<0.4	22	71	39	<0.1	8	90	<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
SDUP7	BH22 0-0.1	F: Silty clay	4	<0.4	28	100	33	<0.1	10	120	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH201	0-0.2	F: Silty Clay	<4	<0.4	19	100	24	0.1	11	84	<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
BH201 - [LAB_DUP]	0-0.2	F: Silty Clay	<4	<0.4	23	110	31	<0.1	12	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	NA
BH201	0.4-0.6	F: Silty Sandy Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH201	0.8-1	F: Silty Sandy Clay	<4	<0.4	17	110	19	<0.1	13	56	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH202	0-0.2	F: Silty Sandy Clay	<4	<0.4	35	110	18	0.1	16	61	<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
BH202	1-1.2	Silty Sandy Clay	<4	<0.4	27	130	5	<0.1	12	48	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH203	0-0.2	F: Silty Sandy Clay	<4	<0.4	29	84	32	<0.1	13	89	<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
BH203	0.8-1	Silty Clay	<4	<0.4	22	74	8	<0.1	8	17	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH204	0-0.2	F: Silty Clay	5	<0.4	10	60	18	<0.1	8	63	0.5	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH204	1.7-1.8	F: Silty Sandy Clay	<4	<0.4	9	85	4	<0.1	14	21	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH205	0-0.2	F: Silty Clay	4	<0.4	10	30	15	<0.1	12	40	<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
BH205 - [LAB_DUP]	0-0.2	F: Silty Clay	<4	<0.4	10	28	15	<0.1	13	38	<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
BH205	0.8-1	F: Silty Clay	<4	<0.4	12	79	12	<0.1	11	35	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH206	0-0.4	F: Silty Sandy Clay	5	<0.4	21	97	38	<0.1	12	180	<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
BH207	0-0.4	F: Silty Clay	<4	<0.4	22	77	35	0.1	9	120	<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
BH208	0.1-0.3	F: Silty Clay	<4	<0.4	19	71	11	<0.1	7	33	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH208	0.7-1	Silty Sandy Clay	<4	<0.4	17	87	6	<0.1	8	19	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH209	0-0.3	F: Silty Clay	6	<0.4	16	67	34	<0.1	13	150	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH210	0.1-0.3	F: Silty Clay	<4	<0.4	3	27	12	<0.1	6	28	1.4	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH210	0.7-1	F: Silty Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH210	1-1.3	F: Gravelly Clay	<4	1	8	56	18	<0.1	10	34	1.9	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH211	0-0.2	F: Silty Sandy Clay	<4	<0.4	29	97	23	0.1	13	77	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH212	0-0.3	F: Silty Sandy Clay	<4	<0.4	9	24	12	<0.1	3	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	Not Detected
BH212 - [LAB_DUP]	0-0.3	F: Silty Sandy Clay	4	<0.4	9	24	12	<0.1	4	62	<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
BH213	0-0.2	F: Silty Sandy Clay	<4	<0.4	27	140	29	<0.1	13	98	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH213	0.4-0.6	F: Silty Sandy Clay	<4	<0.4	<1	9	<1	0.2	<1	<1	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH214	0-0.2	F: Silty Sandy Clay	<4	<0.4	23	84	15	<0.1	11	60	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH215	0-0.2	F: Silty Sandy Clay	4	<0.4	10	34	19	<0.1	9	56	<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
BH215	0.4-0.6	F: Silty Sandy Clay	<4	<0.4	<1	2	<1	<0.1	<1	2	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH216	0-0.2	F: Silty Sandy Clay	<4	<0.4	18	110	13	<0.1	10	53	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH216	1.1-1.3	Silty Sandy Clay	<4	<0.4	13	98	14	<0.1	11	44	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH217	0.1-0.3	F: Silty Clay	12	<0.4	3	44	16	<0.1	19	39	1.7	0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH217	0.7-1	F: Silty Clay	<4	<0.4	<1	4	<1	<0.1	<1	2	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH218	0-0.2	F: Silty Clay	<4	<0.4	27	120	15	<0.1	13	54	0.6	<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
BH219	0-0.2	F: Silty Sandy Clay	<4	<0.4	27	110	41	0.1	10	100	<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
BH219 - [LAB_DUP]	0-0.2	F: Silty Sandy Clay	<4	<0.4	25	100	44	<0.1	10	110	<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
BH219	1.1-1.3	F: Silty Sandy Clay	<4	<0.4	5	40	3	<0.1	4	16	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH220	0-0.2	F: Silty Sandy Clay	<4	<0.4	15	57	21	<0.1	8	68	<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
BH221	0-0.1	F: Sandy silty clay	<4	<0.4	19	57	21	<0.1	12	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	NA
BH221 - [LAB_DUP]	0-0.1	F: Sandy silty clay	5	<0.4	14	40	25	<0.1	12	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	NA
BH221	0.4-0.55	F: Silty clay	<4	<0.4	20	93	28	<0.1	12	160	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH222	0-0.1	F: Silty clay	<4	<0.4	26	84	37	0.2	12	120	<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
BH223	0-0.1	F: Silty clay	<4	<0.4	17	60	19	<0.1	7	100	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH223	0.3-0.4	F: Silty clay	<4	<0.4	17	76	20	<0.1	9	81	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH223	1.0-1.2	F: clayey sand	<4	<0.4	10	73	2	<0.1	11	32	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH224	0-0.1	F: sandy gravel	7	<0.4	14	22	10	<0.1	13	47	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	Not Detected
BH224	0.3-0.5	F: gravelly clay	7	<0.4	16	27	10	<0.1	17	53	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH224	0.75-0.95	Sandy silty clay	<4	<0.4	20	64	14	<0.1	7	27	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
S DUP 1	BH205 0-0.1	Fill	5	<0.4	11	32	19	<0.1	12	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	NA
S DUP 2	BH201 0-0.1	Fill	<4	<0.4	17	110	30	<0.1	11	79	<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
S DUP 3	BH202 0-0.1	Fill	<4	<0.4	22	79	13	<0.1	13	52	<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
S DUP 4	BH203 0-0.1	Fill	<4	<0.4	32	88	33	<0.1	13	95	<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
S DUP 5	BH219 0-0.1	Fill	<4	<0.4	27	97	28	<0.1	10	77	<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
S DUP 6	BH215 0-0.1	Fill	<4	<0.4	10	33	17	<0.1	7	53	<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
SDUP201	BH222 0-0.2	Fill	<4	<0.4	21	95	16	<0.1	9	56	<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
SDUP201	BH222 0-0.2	Fill	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1	<0.1	<0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
FCF-201	SURFACE	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
Total Number of Samples			53	53	53	53	53	53	53	53	53	53	26	27	27	27	26	53	53	53	53	53	53	53	53	53	25
Maximum Value			12	1	35	140	44	0.2	19	180	1.9	0.05	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Detected

Concentration above the CT1 — VALUE
Concentration above SCC1 — VALUE
Concentration above the SCC2 — VALUE
Concentration above PQL — **Bold**
Note: Total number of samples and maximum values consider only the DSI data and not the PSI data. In addition, the grey shaded samples are from the PSI 2022.

JKEnvironments

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)fluoranthen	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cen	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*	*1.0*	*2.0*	*1.0*	*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*
Intra	BH205	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	S DUP 1	BH205 0-0.1	<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
Intra	BH201	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	S DUP 2	BH201 0-0.1	<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
Intra	BH202	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	S DUP 3	BH202 0-0.1	<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
Intra	BH203	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	S DUP 4	BH203 0-0.1	<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
Intra	BH219	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	S DUP 5	BH219 0-0.1	<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
Intra	BH215	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	S DUP 6	BH215 0-0.1	<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	BH222	0-0.1	<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	SDUP201	BH222 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	31/07/23 - 02/08/23																									
Field	TB-201	-	<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	14/08/23																									
Field	FR1-HA	µg/L	69	<50	<50	<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	2/08/23																									
Trip	TS-S201		-	-	-	-	97%	97%	97%	97%	96%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	14/08/23																									

			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	BH205	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	S DUP 1	BH205 0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	BH201	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	S DUP 2	BH201 0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	BH202	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	S DUP 3	BH202 0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	BH203	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	S DUP 4	BH203 0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	BH219	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	S DUP 5	BH219 0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	BH215	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	S DUP 6	BH215 0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	BH222	0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	SDUP201	BH222 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
Field	TB1	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	31/07/23 - 02/08/23																					
Field	TB-201	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	14/08/23																					
Field	FR1-HA	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rinsate	2/08/23																					
Trip	TS-S201		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	14/08/23																					

			Azinphos-methyl (Guth	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*	*0.4*	*1.0*	*1.0*	*1.0*	*0.1*	*1.0*	*1.0*
Intra	BH205	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	10	30	15	<0.1	12	40
laboratory	S DUP 1	BH205 0-0.1	<0.1	<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	11	32	19	<0.1	12	49
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	4.5	nc	10.5	31	17	nc	12	44.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	22%	nc	10%	6%	24%	nc	0%	20%
Intra	BH201	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	19	100	24	0.1	11	84
laboratory	S DUP 2	BH201 0-0.1	<0.1	<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	17	110	30	<0.1	11	79
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	18	105	27	0.075	11	81.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	11%	10%	22%	67%	0%	6%
Intra	BH202	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	35	110	18	0.1	16	61
laboratory	S DUP 3	BH202 0-0.1	<0.1	<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	22	79	13	<0.1	13	52
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	28.5	94.5	15.5	0.075	14.5	56.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	46%	33%	32%	67%	21%	16%
Intra	BH203	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	29	84	32	<0.1	13	89
laboratory	S DUP 4	BH203 0-0.1	<0.1	<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	32	88	33	<0.1	13	95
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	30.5	86	32.5	nc	13	92
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	10%	5%	3%	nc	0%	7%
Intra	BH219	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	27	110	41	0.1	10	100
laboratory	S DUP 5	BH219 0-0.1	<0.1	<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	27	97	28	<0.1	10	77
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	27	103.5	34.5	0.075	10	88.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0%	13%	38%	67%	0%	26%
Intra	BH215	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	10	34	19	<0.1	9	56
laboratory	S DUP 6	BH215 0-0.1	<0.1	<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	10	33	17	<0.1	7	53
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	3	nc	10	33.5	18	nc	8	54.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	67%	nc	0%	3%	11%	nc	25%	6%
Inter	BH222	0-0.1	<0.1	<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	26	84	37	0.2	12	120
laboratory	SDUP201	BH222 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	21	95	16	<0.1	9	56
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	23.5	89.5	26.5	0.125	10.5	88
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	21%	12%	79%	120%	29%	73%
Field	TB1	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<4	<0.4	11	3	2	<0.1	<1	2
Blank	31/07/23 - 02/08/23																						
Field	TB-201	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<4	<0.4	3	<1	3	<0.1	<1	3
Blank	14/08/23																						
Field	FR1-HA	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.01	0.8	<0.03	<0.0005	<0.02	<0.02
Rinsate	2/08/23																						
Trip	TS-S201		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	14/08/23																						

Result outside of QA/QC acceptance criteria

Rinsate metals results in mg/L

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ADWG:	AustralianDrinking Water Guidelines
ANZG	Australian and New Zealand Guidelines
B(a)P:	Benzo(a)pyrene
CRC:	Cooperative Research Centre
ESLs:	Ecological Screening Levels
GIL:	Groundwater Investigation Levels
HILs:	Health Investigation Levels
HSLs:	Health Screening Levels
HSL-SSA:	Health Screening Level-SiteSpecific Assessment
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
ppm:	Parts per million
PCBs:	Polychlorinated Biphenyls
PCE:	Perchloroethylene (Tetrachloroethylene or Tetrachloroethene)
PQL:	Practical Quantitation Limit
RS:	Rinsate Sample
RSL:	Regional Screening Levels
SAC:	Site Assessment Criteria
SSA:	Site Specific Assessment
SSHSLs	Site Specific Health Screening Levels
TB:	Trip Blank
TCA:	1,1,1 Trichloroethane (methyl chloroform)
TCE:	Trichloroethylene (Trichloroethene)
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 G1
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO ECOLOGICAL GILs SAC
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	ANZG 2018 Marine Waters	PSI SAMPLES					DSI SAMPLES							
			MW4	MW4 LAB DUP	MW5	WDUP1 MW4	WDUP2 MW5	MW4	MW4 LAB DUP	MW5	MW204	MW223	MW224	GWDUP201 (MW204)	GWDUP202 (MW4)
Inorganic Compounds and Parameters															
pH	-	7 - 8.5	7.9	NA	7.4	NA	NA	6.7	NA	7.1	7.6	8.5	7.8	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**980**	NA	**630**	NA	NA	**300**	NA	**720**	**560**	**600**	**1200**	NA	NA
Metals and Metalloids															
Arsenic (As III)	1	2.3	**2**	[NT]	<1	**2**	<1	<1	<1	<1	<1	**1**	<1	<1	<1
Cadmium	0.1	0.7	<0.1	[NT]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (SAC for Cr III adopted)	1	27	<1	[NT]	<1	**2**	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	1	1.3	**6**	[NT]	<1	**27**	<1	**9**	**8**	**1**	**7**	**10**	**3**	**6**	**7**
Lead	1	4.4	<1	[NT]	<1	**1**	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	7	<1	[NT]	<1	**4**	<1	<1	<1	<1	<1	<1	**1**	<1	<1
Zinc	1	15	<1	[NT]	<1	**21**	<1	**4**	**4**	**3**	**8**	**7**	**9**	**8**	**5**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)															
Benzene	1	500	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Toluene	1	180	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Ethylbenzene	1	5	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
m+p-xylene	2	75	<2	NA	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2
o-xylene	1	350	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Total xylenes	2	NSL	<2	NA	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2
Volatile Organic Compounds (VOCs), including chlorinated VOCs															
Dichlorodifluoromethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Chloromethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Vinyl Chloride	10	100	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Bromomethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Chloroethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Trichlorofluoromethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
1,1-Dichloroethene	1	700	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Trans-1,2-dichloroethene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1-dichloroethane	1	250	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Cis-1,2-dichloroethene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromochloromethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Chloroform	1	370	**20**	NA	**12**	**14**	**12**	<1	<1	<1	**4**	**12**	**22**	**4**	<1
2,2-dichloropropane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dichloroethane	1	1900	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,1-trichloroethane	1	270	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1-dichloropropene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Cyclohexane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Carbon tetrachloride	1	240	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Benzene	1	500	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Dibromomethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dichloropropane	1	900	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Trichloroethene	1	330	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromodichloromethane	1	NSL	**1**	NA	<1	<1	<1	<1	<1	<1	<1	<10	**4**	<1	<1
trans-1,3-dichloropropene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
cis-1,3-dichloropropene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,2-trichloroethane	1	1900	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Toluene	1	180	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,3-dichloropropane	1	1100	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Dibromochloromethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dibromoethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Tetrachloroethene	1	70	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,1,2-tetrachloroethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Chlorobenzene	1	55	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Ethylbenzene	1	5	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromoform	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
m+p-xylene	2	75	<2	NA	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2
Styrene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,2,2-tetrachloroethane	1	400	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
o-xylene	1	350	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,3-trichloropropane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Isopropylbenzene	1	30	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromobenzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
n-propyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
2-chlorotoluene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
4-chlorotoluene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,3,5-trimethyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Tert-butyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,4-trimethyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,3-dichlorobenzene	1	260	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Sec-butyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,4-dichlorobenzene	1	60	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
4-isopropyl toluene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dichlorobenzene	1	160	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
n-butyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dibromo-3-chloropropane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,4-trichlorobenzene	1	20	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Hexachlorobutadiene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,3-trichlorobenzene	1	3	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Polycyclic Aromatic Hydrocarbons (PAHs)															
Naphthalene	0.2	50	<0.2	NA	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<0.1	<0.1	<0.1	<0.1	<0.1

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

Note: Grey shaded samples indicate groundwater results from PSI 2022.

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)	PSI SAMPLES					DSI SAMPLES							
			MW4	MW4 LAB DUP	MW5	WDUP1 MW4	WDUP2 MW5	MW4	MW4 LAB DUP	MW5	MW204	MW223	MW224	GWDUP201 (MW204)	GWDUP202 (MW4)
Inorganic Compounds and Parameters															
pH	-	6.5 - 8.5	7.9	NA	7.4	NA	NA	6.7	NA	7.1	7.6	8.5	7.8	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**980**	NA	**630**	NA	NA	**300**	NA	**720**	**560**	**600**	**1200**	NA	NA
Metals and Metalloids															
Arsenic (As III)	1	100	**2**	[NT]	<1	**2**	<1	<1	<1	<1	<1	**1**	<1	<1	<1
Cadmium	0.1	20	<0.1	[NT]	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium (total)	1	500	<1	[NT]	<1	**2**	<1	<1	<1	<1	<1	<1	<1	<1	<1
Copper	1	20000	**6**	[NT]	<1	**27**	<1	**9**	**8**	**1**	**7**	**10**	**3**	**6**	**7**
Lead	1	100	<1	[NT]	<1	**1**	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	200	<1	[NT]	<1	**4**	<1	<1	<1	<1	<1	<1	**1**	<1	<1
Zinc	1	30000	<1	[NT]	<1	**21**	<1	**4**	**4**	**3**	**8**	**7**	**9**	**8**	**5**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)															
Benzene	1	10	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Toluene	1	8000	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Ethylbenzene	1	3000	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
m+p-xylene	2	NSL	<2	NA	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2
o-xylene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Total xylenes	2	6000	<2	NA	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2
Volatile Organic Compounds (VOCs), including chlorinated VOCs															
Dichlorodifluoromethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Chloromethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Vinyl Chloride	10	3	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Bromomethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Chloroethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Trichlorofluoromethane	10	NSL	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
1,1-Dichloroethene	1	300	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Trans-1,2-dichloroethene	1	600	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1-dichloroethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Cis-1,2-dichloroethene	1	600	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromochloromethane	1	2500	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Chloroform	1		**20**	NA	**12**	**14**	**12**	<1	<1	<1	**4**	**12**	**22**	**4**	<1
2,2-dichloropropane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dichloroethane	1	30	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,1-trichloroethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1-dichloropropene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Cyclohexane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Carbon tetrachloride	1	30	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Benzene	1	10	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Dibromomethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dichloropropane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Trichloroethene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromodichloromethane	1	NSL	**1**	NA	<1	<1	<1	<1	<1	<1	<1	<10	**4**	<1	<1
trans-1,3-dichloropropene	1	1000	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
cis-1,3-dichloropropene	1	1000	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,2-trichloroethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Toluene	1	8000	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,3-dichloropropane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Dibromochloromethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dibromoethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Tetrachloroethene	1	500	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,1,2-tetrachloroethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Chlorobenzene	1	3000	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Ethylbenzene	1	3000	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromoform	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
m+p-xylene	2	NSL	<2	NA	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2
Styrene	1	300	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,2,2-tetrachloroethane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
o-xylene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,3-trichloropropane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Isopropylbenzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromobenzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
n-propyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
2-chlorotoluene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
4-chlorotoluene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,3,5-trimethyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Tert-butyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,4-trimethyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,3-dichlorobenzene	1	200	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Sec-butyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,4-dichlorobenzene	1	400	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
4-isopropyl toluene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dichlorobenzene	1	15000	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
n-butyl benzene	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dibromo-3-chloropropane	1	NSL	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,4-trichlorobenzene	1	300	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,3-trichlorobenzene	1		<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Hexachlorobutadiene	1	7	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Polycyclic Aromatic Hydrocarbons (PAHs)															
Naphthalene	0.2	NSL	<0.2	NA	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	<0.1	<0.1	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<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	<0.1	<0.1	<0.1	<0.1	<0.1

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

Note: Grey shaded samples indicate groundwater results from PSI 2022.

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	
PQL - Envirolab Services				10	50	1	1	1	2	1	PID
NEPM 2013 - Land Use Category				HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL							
Sample Reference	**Water Depth**	**Depth Category**	**Soil Category**								
MW4	1.5	0m to <2m	Sand	**13**	**210**	<1	<1	<1	<2	<1	51.6
MW4 - LAB DUP	1.5	0m to <2m	Sand	NA	NA	NA	NA	NA	NA	NA	NA
MW5	1.17	0m to <2m	Sand	<10	**280**	<1	<1	<1	<2	<1	11.5
WDUP1 (MW4)	1.5	0m to <2m	Sand	**19**	**360**	<1	<1	<1	<2	<1	NA
WDUP2 (MW5)	1.17	0m to <2m	Sand	<10	**180**	<1	<1	<1	<2	<1	NA
MW4	1.1	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	0.1
MW4 - LAB DUP	1.1	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
MW5	2.52	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	0.1
MW204	1.86	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	0.2
MW223	6.56	4m to <8m	Sand	<100	<50	<10	<10	<10	<2	<10	0.3
MW224*	6.47	2m to <4m	Sand	**51**	<50	<1	<1	<1	<2	<1	1.1
GWDUP201 (MW204)	1.86	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
GWDUP202 (MW4)	1.1	0m to <2m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
Total Number of Samples				8	8	8	8	8	8	8	5
Maximum Value				51	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	1.1

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 dark grey in the Groundwater Assessment Criteria Table below
Note: Grey shaded samples indicate groundwater results from PSI 2022.
* The soil depth in MW224 is only 2.3mBGL, therefore the depth category of 2m-<4m has been adopted.

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
MW4	1.5	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW4 - LAB DUP	1.5	0m to <2m	Sand	NA	NA	NA	NA	NA	NA	NA
MW5	1.17	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
WDUP1	1.5	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
WDUP2	1.17	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW4	1.1	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW4 - LAB DUP	1.1	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW5	2.52	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW204	1.86	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
MW223	6.56	4m to <8m	Sand	1000	1000	800	NL	NL	NL	NL
MW224	6.47	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
GWDUP201 (MW204)	1.86	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA
GWDUP202 (MW4)	1.1	0m to <2m	Sand	SSA	SSA	SSA	SSA	SSA	SSA	SSA

TABLE G4
GROUNDWATER LABORATORY RESULTS COMPARED TO SITE SPECIFIC HSLs - RISK ASSESSMENT
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	NHMRC ADWG 2011	WHO 2008	USEPA RSL Tapwater 2017	PSI SAMPLES					DSI SAMPLES							
					MW4	MW4 LAB DUP	MW5	WDUP1 MW4	WDUP2 MW5	MW4	MW4 LAB DUP	MW5	MW204	MW223	MW224	GWDUP201 (MW204)	GWDUP202 (MW4)
Total Recoverable Hydrocarbons (TRH)																	
C_6-C_9 Aliphatics (assessed using F1)	10	-	100	-	**13**	NA	<10	**19**	<10	<10	<10	<10	<10	<100	**51**	<10	<10
>C_9-C_{14} Aliphatics (assessed using F2)	50	-	100	-	**210**	NA	**280**	**360**	**180**	<50	<50	<50	<50	<50	<50	<50	<50
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)																	
Benzene	1	1	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Toluene	1	800	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Ethylbenzene	1	300	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Total xylenes	2	600	-	-	<2	NA	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Polycyclic Aromatic Hydrocarbons (PAHs)																	
Naphthalene	1	-	-	6.1	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Volatile Organic Compounds (VOCs), including chlorinated VOCs																	
Dichlorodifluoromethane	10	-	-	-	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Chloromethane	10	-	-	-	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Vinyl Chloride	10	0.3	-	-	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Bromomethane	10	-	-	-	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Chloroethane	10	-	-	-	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
Trichlorofluoromethane	10	-	-	-	<10	NA	<10	<10	<10	<10	<10	<10	<10	<100	<10	<10	<10
1,1-Dichloroethene	1	30	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Trans-1,2-dichloroethene	1	60	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1-dichloroethane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Cis-1,2-dichloroethene	1	60	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromochloromethane	1		-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Chloroform	1	250*	-	-	**20**	NA	**12**	**14**	**12**	<1	<1	<1	**4**	**12**	**22**	**4**	<1
Bromodichloromethane	1		-	-	**1**	NA	<1	<1	<1	<1	<1	<1	<1	<10	**4**	<1	<1
2,2-dichloropropane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dichloroethane	1	3	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,1-trichloroethane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1-dichloropropene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Cyclohexane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Carbon tetrachloride	1	3	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Benzene	1	1	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Dibromomethane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dichloropropane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Trichloroethene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
trans-1,3-dichloropropene	1	100	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
cis-1,3-dichloropropene	1	100	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,2-trichloroethane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Toluene	1	800	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,3-dichloropropane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Dibromochloromethane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dibromoethane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Tetrachloroethene	1	50	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,1,2-tetrachloroethane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Chlorobenzene	1	300	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Ethylbenzene	1	300	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromoform	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
m+p-xylene	2	-	-	-	<2	NA	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<2
Styrene	1	30	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,1,2,2-tetrachloroethane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
o-xylene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,3-trichloropropane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Isopropylbenzene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Bromobenzene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
n-propyl benzene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
2-chlorotoluene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
4-chlorotoluene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,3,5-trimethyl benzene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Tert-butyl benzene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,4-trimethyl benzene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,3-dichlorobenzene	1	20	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Sec-butyl benzene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,4-dichlorobenzene	1	40	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
4-isopropyl toluene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dichlorobenzene	1	1500	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
n-butyl benzene	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2-dibromo-3-chloropropane	1	-	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,4-trichlorobenzene	1	30	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
1,2,3-trichlorobenzene	1		-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1
Hexachlorobutadiene	1	0.07	-	-	<1	NA	<1	<1	<1	<1	<1	<1	<1	<10	<1	<1	<1

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

Note: Grey shaded samples indicate groundwater results from PSI 2022.

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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
	PQL Envirolab SYD	*10*	*50*	*100*	*100*	*1*	*1*	*1*	*2*	*1*
	PQL Envirolab VIC	*10*	*50*	*100*	*100*	*1.0*	*1.0*	*1.0*	*2.0*	*1.0*
Intra	MW204	<10	<50	<100	<100	<1	<1	<1	<2	<1
laboratory	GWDUP201	<10	<50	<100	<100	<1	<1	<1	<2	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	MW4	<10	<50	<100	<100	<1	<1	<1	<2	<1
laboratory	GWDUP202	<10	<50	<100	<100	<1	<1	<1	<2	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc
Field	TB-W201	<10	<50	<100	<100	<1	<1	<1	<2	<1
Blank	17/08/2023									
Trip	TS-W201	-	-	-	-	104%	103%	102%	98%	102%
Spike	17/08/2023									

		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	*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*
	PQL Envirolab VIC	*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*
Intra	MW204	<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
laboratory	GWDUP201	<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
duplicate	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	MW4	<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
laboratory	GWDUP202	<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
duplicate	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	TB-W201	<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
Blank	17/08/2023															
Trip	TS-W201	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	17/08/2023															

		Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
	PQL Envirolab VIC	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
Intra	MW204	<1	<0.1	<1	7	<1	<0.05	<1	8
laboratory	GWDUP201	<1	<0.1	<1	6	<1	<0.05	<1	8
duplicate	MEAN	nc	nc	nc	6.5	nc	nc	nc	8
	RPD %	nc	nc	nc	15%	nc	nc	nc	0%
Intra	MW4	<1	<0.1	<1	9	<1	<0.05	<1	4
laboratory	GWDUP202	<1	<0.1	<1	7	<1	<0.05	<1	5
duplicate	MEAN	nc	nc	nc	8	nc	nc	nc	4.5
	RPD %	nc	nc	nc	25%	nc	nc	nc	22%
Field	TB-W201	<1	<0.1	<1	<1	<1	<0.05	<1	<1
Blank	17/08/2023								
Trip	TS-W201	-	-	-	-	-	-	-	
Spike	17/08/2023								

Result outside of QA/QC acceptance criteria Value

Appendix C: Borehole Logs

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BOREHOLE LOG

Borehole No. 4

1 / 2

EASTING: 305534.879
NORTHING: 6181919.422

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED COMMUNITY HEALTH CENTRE
Location: PORT KEMBLA HOSPITAL, WARRAWONG, NSW

Job No.: 34300LX2 **Method:** SPIRAL AUGER **R.L. Surface:** 26.91 m
Date: 27/9/22 **Datum:** AHD
Plant Type: JK308 **Logged/Checked By:** Q.V./R.R.

Groundwater Record	SAMPLES (ES, U50, DB, DS)	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING							FILL: Silty clay, medium to high plasticity, dark grey, with fine to medium grained sandstone and latite gravel, trace of root fibres.	w>PL			GRASS COVER
						-	LATITE: fine to medium grained, light grey, dark grey, green grey and orange brown.	MW	M		DAPTO LATITE MODERATE 'TC' BIT RESISTANCE HIGH RESISTANCE
			26	1			REFER TO CORED BOREHOLE LOG				GROUNDWATER MONITORING WELL INSTALLED TO 6.1m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 1.0m TO 6.1m. CASING 0.05m TO 1.0m. 2mm SAND FILTER PACK 1.2m TO 6.1m. BENTONITE SEAL 0.8m TO 1.2m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
			25	2							
			24	3							
			23	4							
			22	5							
			21	6							
			20								

JKGeotechnics

CORED BOREHOLE LOG

Borehole No. 4

EASTING: 305534.879
NORTHING: 6181919.422

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED COMMUNITY HEALTH CENTRE
Location: PORT KEMBLA HOSPITAL, WARRAWONG, NSW

Job No.: 34300LX2 **Core Size:** NMLC **R.L. Surface:** 26.91 m
Date: 27/9/22 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK308 **Bearing:** N/A **Logged/Checked By:** Q.V./R.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION (Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components)	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	SPACING (mm)	DEFECT DETAILS – DESCRIPTION (Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness) Specific	General	Formation
		26			START CORING AT 0.94m							
			1		NO CORE 0.33m							
70% RETURN		25	2		LATITE: fine grained, dark grey, speckled light grey and green grey. Joint spacing generally >0.6m below 2.5m.	SW	VH	5.5, 7.1, 7.4		(1.39m) J, 5°, P, S, Clay FILLED (1.45m) Cr, 0°, 75 mm.t (1.55m) Cr, 10°, 15 mm.t (1.61m) J, 25°, P, R, Cn (1.71m) J, 80°, C, R, Fe Ct (1.81m) Jh, 80°, C, R, Fe Ct (1.86m) Jx2, 50°, C, R, Fe Ct (2.13m) XWS, 10°, 25 mm.t (2.15m) J, 25°, P, R, Clay FILLED (2.23m) J, 30°, Un, R, Cn (2.41m) J, 80°, Un, R, Fe Sn		
100% RETURN		24, 23, 22, 21	3, 4, 5, 6			FR		9.0, 6.5, 8.7, 7.9, 4.3, 7.7, 7.1		(2.50m) J, 60°, P, R, Cn (2.62m) J, 70°, C, R, Cn (2.86m) J, 5°, P, R, Cn (3.89m) J, 80°, C, R, Cn (4.51m) J, 25°, P, R, Clay FILLED (5.40m) J, 0°, P, R, Cn (5.44m) Jx2, 25°, Un, R, Cn (5.56m) Jh, 70°, C, R, Cn (6.05m) Jx2, 60°, P, R, Cn		
		20			END OF BOREHOLE AT 6.16 m							

JK 9.02.4 LIB.GLB Log JK CORED BOREHOLE - MASTER 34300LX2 WARRAWONG.GPJ <<DrawingFile>> 02/11/2022 14:08 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

JKGeotechnics

BOREHOLE LOG

Borehole No.
5

EASTING: 305507.874
NORTHING: 6181951.763

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED COMMUNITY HEALTH CENTRE
Location: PORT KEMBLA HOSPITAL, WARRAWONG, NSW

Job No.: 34300LX2 **Method:** SPIRAL AUGER **R.L. Surface:** 28.49 m
Date: 27/9/22 **Datum:** AHD
Plant Type: JK308 **Logged/Checked By:** Q.V./R.R.

Groundwater Record	SAMPLES ES U50 DB DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING		N = 4 2,2,2	28	1			FILL: Silty clay, medium plasticity, dark grey and dark brown, with fine to medium grained sand and fine to medium grained igneous and sandstone gravel, trace of brick fragments, ash and root fibres.	w~PL			GRASS COVER SAMPLE TOO FRIABLE FOR HP
		N = 8 2,3,5	27 26	2			FILL: Silty clay, medium to high plasticity, dark brown, brown and dark grey, with fine to medium grained sand and fine to medium grained sandstone gravel, trace of root fibres.	w>PL		210 210 220	
			25	3		-	LATITE: fine to medium grained, dark grey, light grey, green grey and red brown, with occasional clay bands.	HW	L - M		DAPTO LATITE LOW TO MODERATE 'TC' BIT RESISTANCE HIGH RESISTANCE
			24 23 22	4 5 6			REFER TO CORED BOREHOLE LOG				'TC' BIT REFUSAL GROUNDWATER MONITORING WELL INSTALLED TO 8.15m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 3m TO 8.15m. CASING 0.05m TO 3m. 2mm SAND FILTER PACK 3.2m TO 8.15m. BENTONITE SEAL 2.5m TO 3.2m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.

JK 9.02.4 LIB.GLB Log JK AUGERHOLE - MASTER 34300LX2 PORTKEMBLAHOSPITAL.GPJ <<DrawingFile>> 02/11/2022 12:04 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

JKGeotechnics

CORED BOREHOLE LOG

Borehole No.
5
2 / 2

EASTING: 305507.874
NORTHING: 6181951.763

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED COMMUNITY HEALTH CENTRE
Location: PORT KEMBLA HOSPITAL, WARRAWONG, NSW

Job No.: 34300LX2	**Core Size:** NMLC	**R.L. Surface:** 28.49 m
Date: 27/9/22	**Inclination:** VERTICAL	**Datum:** AHD
Plant Type: JK308	**Bearing:** N/A	**Logged/Checked By:** Q.V./R.R.

Water Loss\Level	Barrel Lift	RL (m AHD)	Depth (m)	CORE DESCRIPTION: Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_s(50)$	DEFECT DETAILS – DESCRIPTION: Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness (Specific)	Formation
		25		START CORING AT 3.60m					
70% RETURN		24	4	LATITE: fine grained, dark grey, light grey and green grey. Non-intact below 4.4m.	SW	VH	5.7, 6.1	(3.64m) J, 35°, Un, R, Cn (3.83m) J, 40°, P, R, Cn (3.93m) Jhx2, 90°, C, R, Cn (4.11m) J, 90°, C, R, Cn (4.41m) XWS, 20°, 20 mm.t (4.50m) J, 70°, C, R, Fe Ct (4.67m) J, 80°, C, R, Cn (4.90m) J, 90°, C, R, Cn	
		23	5–6	NO CORE 1.47m					
100% RETURN		22–21	7–8	LATITE: fine grained, dark grey, speckled light grey and green grey.	FR	VH	6.1, 7.0, 7.2, 8.2	(6.67m) J, 20°, P, R, Cn (6.87m) J, 0°, P, R, Fe Ct (6.91m) J, 5°, P, R, Fe Ct (6.95m) J, 20°, P, R, Cn (7.07m) J, 5°, P, R, Fe Sn (7.39m) J, 5°, P, R, Fe Sn	
		20–19	9	END OF BOREHOLE AT 8.15 m					

Point load strength index scale: VL -0.1, L -0.3, M -1, H -3, VH -10, EH
Spacing (mm): 600, 200, 60, 20

JK 9.02.4 LIB.GLB Log JK CORED BOREHOLE - MASTER 34300LX2 WARRAWONG.GPJ <<DrawingFile>> 02/11/2022 14:08 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH201 **1/1**

SDUP2: 0-0.1m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A

Date: 1/8/23 **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, low to medium plasticity, brown, trace of sand, igneous and sandstone gravel, and root fibres.	w≈PL			GRASS COVER SCREEN: 10.01kg 0-0.1m, NO FCF
			0.5			FILL: Silty sandy clay, medium to high plasticity, brown, with igneous and latite cobbles, trace of igneous and sandstone gravel, and brick fragments.				SCREEN: 11.11kg 0.1-1.0m, NO FCF
			1							
						END OF BOREHOLE AT 1.1m				REFUSAL ON INFERRED BEDROCK
			1.5							
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH202

1/1

SDUP3: 0-0.1m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A

Date: 1/8/23 **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 sandy clay, low to medium plasticity, brown, trace of igneous gravel, tree roots and root fibres.	w≈PL			GRASS COVER SCREEN: 10.33kg 0-0.1m, NO FCF
						as above, but with sandstone cobbles.				SCREEN: 10.51kg 0.1-0.6m, NO FCF
			0.5		CI-CH	Silty sandy CLAY: medium to high plasticity, light brown.	w≈PL			RESIDUAL
			1							
						END OF BOREHOLE AT 1.2m				
			1.5							
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No.	BH203
	1/1

SDUP4: 0-0.1m

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A

Date: 1/8/23 **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 sandy clay, low to medium plasticity, brown, trace of ironstone gravel and root fibres.	w≈PL			GRASS COVER SCREEN: 10.12kg 0-0.1m, NO FCF SCREEN: 10.71kg 0.1-0.6m, NO FCF
			0.5		CH	Silty CLAY: high plasticity, light brown.	w≈PL			RESIDUAL
			1							
			1.5			END OF BOREHOLE AT 1.1m				
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH/MW204**

1/3

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 31/7/23 **Datum:** -

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			FILL: Silty clay, low to medium plasticity, brown, trace of ironstone gravel, sand and root fibres.	w≈PL			GRASS COVER SCREEN: 10.61kg 0-0.1m, NO FCF SCREEN: 4.07kg 0.1-1.0m, NO FCF
		N = 7 3,4,3	0.5			FILL: Silty sandy clay, low to medium plasticity, dark brown, with ironstone gravel.				
			1							
		N = 24 4,10,14	1.5			as above, but light grey.	w<PL			INSUFFICIENT RETURN FOR BULK SCREEN
					-	LATITE: 6.20m.t				COMMENCE CORING AT 1.8m DEPTH -LATITE ROCK CORE
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No.
BH/MW204
2/3

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 31/7/23 **Datum:** -

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
										LATITE: 6.20m.t				
							4							
							4.5							
							5							
							5.5							
							6							
							6.5							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH/MW204**

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 31/7/23 **Datum:** -

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
							7.5			LATITE: 6.20m.t				
							8 8.5 9 9.5 10			END OF BOREHOLE AT 8.0				GROUNDWATER MONITORING WELL INSTALLED TO 8.0m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 0m TO 2.0m. CASING 8.0m TO 2.0. BENTONITE SEAL 0.7m TO 0m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH205** **1/1**

SDUP1: 0-0.1m

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE
Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A
Date: 1/8/23 **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, low to medium plasticity, brown, trace of igneous gravel, sand, clay nodules and root fibres.	w≈PL			GRASS COVER SCREEN: 10.16kg 0-0.1m, NO FCF SCREEN: 10.47kg 0.1-1.1m, NO FCF
			0.5							
			1			END OF BOREHOLE AT 1.0m				SPIRAL AUGER REFUSAL ON INFERRED BEDROCK
			1.5							
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No.
BH206
1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 2/8/23 **Datum:** -

Plant Type: - **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, low to medium plasticity, brown, trace of root fibres.	w≈PL			GRASS COVER SCREEN: 5.45kg 0-0.4m, NO FCF
							0.5			END OF BOREHOLE AT 0.4m				HAND AUGER REFUSAL ON OBSTRUCTION IN FILL
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No.
BH207
1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 31/7/23 **Datum:** -

Plant Type: - **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 COMPLE-TION							0			FILL: Silty sandy clay, low to medium plasticity, brown, trace of igneous gravel, sand, timber fragments and root fibres.	w≈PL			GRASS COVER SCREEN: 4.81kg 0-0.1m, NO FCF SCREEN: 7.11kg 0.1-0.5m, NO FCF
							0.5			END OF BOREHOLE AT 0.5m				HAND AUGER REFUSAL ON STIFF CLAY
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH208**

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 31/7/23 **Datum:** -

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			ASPHLTIC CONCRETE: 100mm.t				
	■		■		■				-	FILL: Silty clay, medium to high plasticity, brown and orange brown, trace of igneous gravel, and asphalt fragments.	w≈PL			SCREEN: 4.62kg 0.1-0.3m, NO FCF
	■		■			N = 8 2,2,6	0.5		SC	Silty sandy CLAY: medium to high plasticity, dark brown and orange brown.	w≈PL			RESIDUAL
							1			END OF BOREHOLE AT 1.1m				'TC' BIT REFUSAL ON INFERRED BEDROCK
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No.
BH209
1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 2/8/23 **Datum:** -

Plant Type: - **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 igneous gravel, sand and root fibres.				GRASS COVER SCREEN: 6.91kg 0-0.3m, NO FCF
							0.5			END OF BOREHOLE AT 0.3m				HAND AUGER REFUSAL ON STIFF CLAY
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH210** 1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 31/7/23 **Datum:** -

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: 100mm.t				
					-	FILL: Silty clay, low to medium plasticity, dark brown, trace of igneous gravel, brick fragments and slag.	w≈PL			SCREEN: 2.16kg 0.1-0.3m, NO FCF
		n = 19 3,8,11	0.5			FILL: Silty clay, low to medium plasticity, dark brown and light grey, trace of igneous and sandstone gravel, sand, and brick fragments.				SCREEN: 6.74kg 0.3-1.0m, NO FCF INSUFFICIENT RETURN FOR BULK SAMPLE
			1			FILL: Gravelly clay, low to medium plasticity, dark brown, with igneous gravel.				HIGH 'TC' IT RESISTANCE
			1.5			END OF BOREHOLE AT 1.3m				'TC' BIT REFUSAL ON INFERRED BEDROCK
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. BH211

1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A

Date: 2/8/23 **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 sandy clay, low to medium plasticity, dark brown, with igneous gravel and cobbles, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 12.01kg 0-0.2m, NO FCF
										END OF BOREHOLE AT 0.2m				REFUSAL ON OBSTRUCTION IN FILL
							0.5							
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. BH212

1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 2/8/23 **Datum:** -

Plant Type: - **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, low to medium plasticity, brown, trace of root fibres.	w≈PL			GRASS COVER SCREEN: 5.11kg 0-0.3m, NO FCF
							0.5			END OF BOREHOLE AT 0.3m				HAND AUGER REFUSAL ON STIFF CLAY
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH213**

1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A

Date: 2/8/23 **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 sandy clay, low to medium plasticity, brown, with igneous cobbles, trace of igneous gravel, clay nodules and root fibres.	w≈PL			GRASS COVER SCREEN: 11.91kg 0-0.1m, NO FCF SCREEN: 11.15kg 0.1-0.8m, NO FCF
			0.5			as above, but light brown.				
						END OF BOREHOLE AT 0.8m				REFUSAL ON OBSTRUCTION IN FILL/POSSIBLY BEDROCK
			1							
			1.5							
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No.
BH214
1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A

Date: 2/8/23 **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 – 0.5			FILL: Silty sandy clay, low to medium plasticity, dark brown, with igneous gravel and cobbles, trace of root fibres.	w≈PL			GRASS COVER SCREEN: 10.22kg 0-0.1m, NO FCF SCREEN: 10.91kg 0.1-0.6m, NO FCF
							1 – 3.5			END OF BOREHOLE AT 0.6m				REFUSAL ON OBSTRUCTION IN FILL

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH215** 1/1

SDUP6: 0-0.1m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A

Date: 2/8/23 **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 sandy clay, low to medium plasticity, brown, with brick fragments, trace of igneous and sandstone gravel and cobbles, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 10.12kg 0-0.1m, NO FCF SCREEN: 11.01kg 0.1-0.7m, NO FCF
			0.5							
						END OF BOREHOLE AT 0.7m				REFUSAL ON OBSTRUCTION IN FILL/POSSIBLY BEDROCK
			1							
			1.5							
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH216** **1/1**

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE
Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A
Date: 1/8/23 **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 sandy clay, medium to high plasticity, brown, with igneous cobbles and brick fragments, trace of igneous and sandstone gravel, roots and root fibres.	w≈PL			GRASS COVER SCREEN: 10.21kg 0-0.1m, NO FCF SCREEN: 11.37kg 0.1-0.7m, NO FCF
			0.5			FILL: Silty sandy clay, low to medium plasticity, light brown, trace of igneous gravel.				
			1		CL-CI	Silty sandy CLAY: low to medium plasticity, light brown.	w≈PL			RESIDUAL
			1.5			END OF BOREHOLE AT 1.3m				
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH217**

1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 31/7/23 **Datum:** -

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 COMPLE-TION			0			ASPHALTIC CONCRETE: 100mm.t				
					-	FILL: Silty clay, low to medium plasticity, dark brown, trace of igneous gravel, and sand.	w<PL			SCREEN: 1.91kg 0.1-0.7m, NO FCF
		N = 10 3,4,6	0.5			as above, but trace of brick fragments.	w≈PL			SCREEN: 6.45kg 0.7-1.1m, NO FCF
			1			END OF BOREHOLE AT 1.1m				TC' BIT REFUSAL ON INFERRED BEDROCK
			1.5							
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No.	BH218	1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A

Date: 1/8/23 **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, low to medium plasticity, light brown, with igneous and sandstone cobbles, and brick fragments, trace of roots and root fibres.	w≈PL			GRASS COVER SCREEN: 9.01kg 0-0.1m, NO FCF SCREEN: 10.33kg 0.1-0.6m, NO FCF
			0.5			as above, but brown.				
						END OF BOREHOLE AT 0.6m				REFUSAL ON INFERRED BEDROCK
			1							
			1.5							
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. BH219 **1/1**

SDUP5: 0-0.1m

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE
Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A
Date: 1/8/23 **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 sandy clay, low to medium plasticity, dark brown, trace of igneous gravel and cobbles, and root fibres.	w≈PL			GRASS COVER SCREEN: 8.71kg 0-0.1m, NO FCF SCREEN: 11.45kg 0.1-1.3m, NO FCF
			0.5			as above, but light brown.				
			1			as above, but without igneous cobbles.				
			1.5			END OF BOREHOLE AT 1.3m				REFUSAL ON INFERRED BEDROCK
			2							
			2.5							
			3							
			3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No.
BH220
1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE
Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** 300mm PENDULUM AUGER **R.L. Surface:** N/A
Date: 1/8/23 **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 sandy clay, low to medium plasticity, brown, with igneous cobbles and brick fragments, trace of igneous and sandstone gravel.	w≈PL			GRASS COVER SCREEN: 10.29kg 0-0.1m, NO FCF SCREEN: 11.25kg 0.1-0.6m, NO FCF
							0.5			as above, but light brown.				
										END OF BOREHOLE AT 0.6m				REFUSAL ON OBSTRUCTION IN FILL/POSSIBLY BEDROCK
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. BH221

1/1

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 15/8/23 **Datum:** -

Plant Type: - **Logged/Checked by:** K.T./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: Sandy silty clay, medium to high plasticity, dark brown, trace of ironstone gravel, ash, bark chips and root fibres.	w<PL			GRASS COVER SCREEN: 8.97kg 0-0.1m, NO FCF
	■		■				0.5			FILL: Silty clay, medium to high plasticity, dark brown, trace of igneous and ironstone gravel, brick and concrete fragments and root fibres.				INSUFFICIENT RETURN FOR BULK SAMPLE
										END OF BOREHOLE AT 0.55m				HAND AUGER REFUSAL ON GRAVEL/HARD CLAY
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

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ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH222**

1/1

SDUP201: 0-0.1m

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** HAND AUGER **R.L. Surface:** N/A

Date: 15/8/23 **Datum:** -

Plant Type: - **Logged/Checked by:** K.T./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, dark brown, trace of sand, igneous and ironstone gravel, roots and root fibres.	w<PL			GRASS COVER SCREEN: 8.76kg 0-0.1m, NO FCF
										FILL: Silty clay, medium to high plasticity, brown, trace of sand, ironstone gravel and root fibres.				INSUFFICIENT RETURN FOR BULK SAMPLE
							0.5			END OF BOREHOLE AT 0.4m				HAND AUGER REFUSAL ON GRAVEL/HARD CLAY
							1							
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH/MW223**

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 14/8/23 **Datum:** -

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

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, medium to high plasticity, dark brown, trace of sand, and igneous, ironstone and sandstone gravel, and root fibres.	w<PL			GRASS COVER SCREEN: 9.25kg 0-0.1m, NO FCF
				FILL: Silty clay, medium to high plasticity, brown, trace of igneous and sandstone gravel and root fibres.				SCREEN: 4.75kg 0.15-0.4m, NO FCF
	N = SPT 18/ 150mm REFUSAL	0.5		FILL: Clayey sand, fine to medium grained, brown, with fine to medium grained ash.	D			SCREEN: 3.2kg 0.7-1.0m, NO FCF
	N = SPT 21/ 150mm REFUSAL	1.5		FILL: Sand, fine to medium grained, brown, with clay fines, trace of igneous gravel.	D			POSSIBLY NATURAL SCREEN: 2.8kg 1.7-2.0m, NO FCF SCREEN: 7.01kg 2.5-3.0m, NO FCF
	N = SPT 23/ 150mm REFUSAL	3	CL-CI	Silty CLAY: low to medium plasticity, brown, with fine to medium grained sand.	w≈PL	Hd		RESIDUAL
		3.5						

Samples: ES, ASS, ASB, SAL, DB

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH/MW223**

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 14/8/23 **Datum:** -

Plant Type: JK205 **Logged/Checked by:** K.T./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
					CL-CI	Silty CLAY: low to medium plasticity, brown, with fine to medium grained sand.	w≈PL	Hd		
			4							
					-	Extremely weathered latite: silty CLAY, low to medium plasticity, brown grey.	XW	Hd		DAPTO LATITE
			4.5			LATITE: fine grained, light grey and dark grey.	VH			COMMENCED CORING AT 4.3m DEPTH
			5							
			5.5							
			6							
			6.5							
			7							

ENVIRONMENTAL LOG

Log No.
BH/MW223

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE
Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A
Date: 14/8/23 **Datum:** -
Plant Type: JK205 **Logged/Checked by:** K.T./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
							7.5			LATITE: fine grained, light grey and dark grey.	VH			DAPTO LATITE
							8 8.5 9 9.5 10			END OF BOREHOLE AT 8.0m				GROUNDWATER MONITORING WELL INSTALLED TO 8.0m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 3.0m TO 8.0m. CASING 3.0m TO SURFACE. 2mm SAND FILTER PACK 3.2m TO 8.0 m. BENTONITE SEAL 2.7m TO 3.2m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.

JKEnvironments

ENVIRONMENTAL LOG

Log No. **BH/MW224**

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 14/8/23 **Datum:** -

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

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: Sandy gravel, fine to coarse grained, grey, sub-angular, igneous, fine to medium grained sand.	D			SCREEN: 11.2kg 0-0.1m, NO FCF
				FILL: Gravelly clay, low to medium plasticity, grey, fine to coarse grained igneous gravel, trace of sand.	w<PL			SCREEN: 7.27kg 0.1-0.5m, NO FCF
	N = 6 3,3,3	0.5	CI-CH	Sandy silty CLAY: medium to high plasticity, brown, trace of igneous gravel.	w<PL			RESIDUAL
	N = 12 3,6,6	1.5						
			-	Extremely Weathered latite: silty sandy clay, low to medium plasticity, grey brown.	XW	D		DAPTO LATITE
				LATITE: fine grained, dark grey and light grey, with iron staining in fractures.	VH			COMMENCED CORING AT 2.6m DEPTH

Depth scale: 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5

Samples: ES, ASS, ASB, SAL, DB

ENVIRONMENTAL LOG

Log No.
BH/MW224
2/3

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE

Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A

Date: 14/8/23 **Datum:** -

Plant Type: JK205 **Logged/Checked by:** K.T./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
										LATITE: fine grained, dark grey and light grey, with iron staining in fractures.	VH			DAPTO LATITE
							4							
							4.5							
							5							
							5.5							
							6							
							6.5							
							7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: HEALTH INFRASTRUCTURE
Project: PROPOSED NEW WARRAWONG COMMUNITY HEALTH CENTRE
Location: 85-91 COWPER STREET, WARRAWONG, NSW

Job No.: E34300PT2 **Method:** SPIRAL AUGER **R.L. Surface:** N/A
Date: 14/8/23 **Datum:** -
Plant Type: JK205 **Logged/Checked by:** K.T./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
										LATITE: fine grained, dark grey and light grey, with iron staining in fractures.	VH			DAPTO LATITE
							7.5			END OF BOREHOLE AT 7.5m				GROUNDWATER MONITORING WELL INSTALLED TO 7.5m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 2.5m TO 7.5m. CASING 2.5m TO SURFACE. 2mm SAND FILTER PACK 2.3m TO 7.5 m. BENTONITE SEAL 2.0m TO 2.3m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
							8							
							8.5							
							9							
							9.5							
							10							

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:

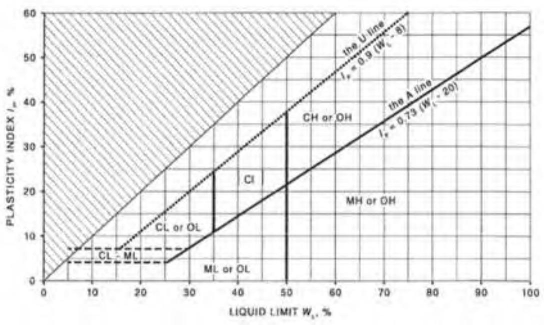
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

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



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

<table>
<tr><th colspan="2">Term</th><th colspan="2">Abbreviation</th><th>Definition</th></tr>
<tr><td colspan="2">Residual Soil</td><td colspan="2">RS</td><td>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.</td></tr>
<tr><td colspan="2">Extremely Weathered</td><td colspan="2">XW</td><td>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.</td></tr>
<tr><td>Highly Weathered</td><td rowspan="2">Distinctly Weathered (Note 1)</td><td>HW</td><td rowspan="2">DW</td><td>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.</td></tr>
<tr><td>Moderately Weathered</td><td>MW</td><td>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.</td></tr>
<tr><td colspan="2">Slightly Weathered</td><td colspan="2">SW</td><td>Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.</td></tr>
<tr><td colspan="2">Fresh</td><td colspan="2">FR</td><td>Rock shows no sign of decomposition of individual minerals or colour changes.</td></tr>
</table>

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

Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Guide to Strength	
			Point Load Strength Index $Is_{(50)}$ (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 D: Laboratory Reports & COC Documents

Soil and Groundwater Laboratory Documents

Envirolab Services Pty Ltd
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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 329661

Client Details

Client	JK Environments
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E34300PT2, Warrawong**
Number of Samples	53 Soil, 1 Water
Date samples received	03/08/2023
Date completed instructions received	03/08/2023

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	11/08/2023
Date of Issue	11/08/2023

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Anthony Clark
Authorised by Asbestos Approved Signatory: Nyovan Moonean

Results Approved By
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Hannah Nguyen, Metals Supervisor
Loren Bardwell, Development Chemist
Nyovan Moonean, Asbestos Approved Identifier/Counter
Steven Luong, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		329661-1	329661-3	329661-4	329661-6	329661-7
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0-0.2	0.8-1	0-0.2	1-1.2	0-0.2
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
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	%	94	114	128	128	118

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		329661-9	329661-10	329661-12	329661-13	329661-15
Your Reference	UNITS	BH203	BH204	BH204	BH205	BH205
Depth		0.8-1	0-0.2	1..7-1.8	0-0.2	0.8-1
Date Sampled		1/08/2023	31/07/2023	31/07/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	%	127	126	116	104	113

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		329661-16	329661-17	329661-18	329661-19	329661-20
Your Reference	UNITS	BH206	BH207	BH208	BH208	BH209
Depth		0-0.4	0-0.4	0.1-0.3	0.7-1	0-0.3
Date Sampled		2/08/2023	31/07/2023	31/07/2023	31/07/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	%	92	106	126	106	114

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		329661-21	329661-23	329661-24	329661-25	329661-26
Your Reference	UNITS	BH210	BH210	BH211	BH212	BH213
Depth		0.1-0.3	1-1.3	0-0.2	0-0.3	0-0.2
Date Sampled		31/07/2023	31/07/2023	2/08/2023	2/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	%	92	107	123	126	122

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		329661-28	329661-30	329661-32	329661-34	329661-35
Your Reference	UNITS	BH214	BH215	BH216	BH216	BH217
Depth		0-0.2	0-0.2	0-0.2	1.1-1.3	0.1-0.3
Date Sampled		2/08/2023	2/08/2023	1/08/2023	1/08/2023	31/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	%	121	118	122	94	92

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		329661-37	329661-39	329661-42	329661-43	329661-45
Your Reference	UNITS	BH218	BH219	BH219	BH220	S DUP 1
Depth		0-0.2	0-0.2	1.1-1.3	0-0.2	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	%	103	88	92	116	106

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		329661-46	329661-47	329661-48	329661-49	329661-50
Your Reference	UNITS	S DUP 2	S DUP 3	S DUP 4	S DUP 5	S DUP 6
Depth		-	-	-	-	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	%	127	128	91	113	94

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		329661-51
Your Reference	UNITS	TB1
Depth		-
Date Sampled		31/07/2023
Type of sample		Soil
Date extracted	-	04/08/2023
Date analysed	-	05/08/2023
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	94

svTRH (C10-C40) in Soil						
Our Reference		329661-1	329661-3	329661-4	329661-6	329661-7
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0-0.2	0.8-1	0-0.2	1-1.2	0-0.2
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	06/08/2023	06/08/2023	06/08/2023	06/08/2023	06/08/2023
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	%	87	90	86	86	86

svTRH (C10-C40) in Soil						
Our Reference		329661-9	329661-10	329661-12	329661-13	329661-15
Your Reference	UNITS	BH203	BH204	BH204	BH205	BH205
Depth		0.8-1	0-0.2	1..7-1.8	0-0.2	0.8-1
Date Sampled		1/08/2023	31/07/2023	31/07/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	06/08/2023	06/08/2023	05/08/2023	06/08/2023	05/08/2023
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	110	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	110	<50	<50	<50
Surrogate o-Terphenyl	%	86	89	87	85	85

svTRH (C10-C40) in Soil						
Our Reference		329661-16	329661-17	329661-18	329661-19	329661-20
Your Reference	UNITS	BH206	BH207	BH208	BH208	BH209
Depth		0-0.4	0-0.4	0.1-0.3	0.7-1	0-0.3
Date Sampled		2/08/2023	31/07/2023	31/07/2023	31/07/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	110
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	110
Surrogate o-Terphenyl	%	86	86	86	84	84

svTRH (C10-C40) in Soil						
Our Reference		329661-21	329661-23	329661-24	329661-25	329661-26
Your Reference	UNITS	BH210	BH210	BH211	BH212	BH213
Depth		0.1-0.3	1-1.3	0-0.2	0-0.3	0-0.2
Date Sampled		31/07/2023	31/07/2023	2/08/2023	2/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	%	94	90	87	86	86

svTRH (C10-C40) in Soil						
Our Reference		329661-28	329661-30	329661-32	329661-34	329661-35
Your Reference	UNITS	BH214	BH215	BH216	BH216	BH217
Depth		0-0.2	0-0.2	0-0.2	1.1-1.3	0.1-0.3
Date Sampled		2/08/2023	2/08/2023	1/08/2023	1/08/2023	31/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	110
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	110
Surrogate o-Terphenyl	%	85	83	86	82	93

svTRH (C10-C40) in Soil						
Our Reference		329661-37	329661-39	329661-42	329661-43	329661-45
Your Reference	UNITS	BH218	BH219	BH219	BH220	S DUP 1
Depth		0-0.2	0-0.2	1.1-1.3	0-0.2	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	05/08/2023	05/08/2023	05/08/2023	05/08/2023	05/08/2023
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	%	86	86	87	84	84

svTRH (C10-C40) in Soil						
Our Reference		329661-46	329661-47	329661-48	329661-49	329661-50
Your Reference	UNITS	S DUP 2	S DUP 3	S DUP 4	S DUP 5	S DUP 6
Depth		-	-	-	-	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	06/08/2023	06/08/2023	06/08/2023	06/08/2023	06/08/2023
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	%	84	86	86	87	82

svTRH (C10-C40) in Soil		
Our Reference		329661-51
Your Reference	UNITS	TB1
Depth		-
Date Sampled		31/07/2023
Type of sample		Soil
Date extracted	-	04/08/2023
Date analysed	-	06/08/2023
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	85

PAHs in Soil						
Our Reference		329661-1	329661-3	329661-4	329661-6	329661-7
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0-0.2	0.8-1	0-0.2	1-1.2	0-0.2
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	%	91	94	92	80	88

PAHs in Soil						
Our Reference		329661-9	329661-10	329661-12	329661-13	329661-15
Your Reference	UNITS	BH203	BH204	BH204	BH205	BH205
Depth		0.8-1	0-0.2	1..7-1.8	0-0.2	0.8-1
Date Sampled		1/08/2023	31/07/2023	31/07/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	10/08/2023	07/08/2023	07/08/2023	07/08/2023
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	0.3	<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	0.5	<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	%	86	110	92	76	81

PAHs in Soil						
Our Reference		329661-16	329661-17	329661-18	329661-19	329661-20
Your Reference	UNITS	BH206	BH207	BH208	BH208	BH209
Depth		0-0.4	0-0.4	0.1-0.3	0.7-1	0-0.3
Date Sampled		2/08/2023	31/07/2023	31/07/2023	31/07/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	%	84	85	86	81	85

PAHs in Soil						
Our Reference		329661-21	329661-23	329661-24	329661-25	329661-26
Your Reference	UNITS	BH210	BH210	BH211	BH212	BH213
Depth		0.1-0.3	1-1.3	0-0.2	0-0.3	0-0.2
Date Sampled		31/07/2023	31/07/2023	2/08/2023	2/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	09/08/2023	09/08/2023	07/08/2023	07/08/2023	07/08/2023
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	0.9	0.7	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	0.8	<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	0.4	0.3	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.05	<0.05	<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	1.4	1.9	<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	%	103	100	83	87	91

PAHs in Soil						
Our Reference		329661-28	329661-30	329661-32	329661-34	329661-35
Your Reference	UNITS	BH214	BH215	BH216	BH216	BH217
Depth		0-0.2	0-0.2	0-0.2	1.1-1.3	0.1-0.3
Date Sampled		2/08/2023	2/08/2023	1/08/2023	1/08/2023	31/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	09/08/2023
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	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	0.4
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	1.7
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	83	81	92	81	97

PAHs in Soil						
Our Reference		329661-37	329661-39	329661-42	329661-43	329661-45
Your Reference	UNITS	BH218	BH219	BH219	BH220	S DUP 1
Depth		0-0.2	0-0.2	1.1-1.3	0-0.2	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	09/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	0.4	<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	0.2	<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	0.60	<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	%	99	83	83	84	89

PAHs in Soil						
Our Reference		329661-46	329661-47	329661-48	329661-49	329661-50
Your Reference	UNITS	S DUP 2	S DUP 3	S DUP 4	S DUP 5	S DUP 6
Depth		-	-	-	-	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	%	84	90	82	83	81

PAHs in Soil		
Our Reference		329661-51
Your Reference	UNITS	TB1
Depth		-
Date Sampled		31/07/2023
Type of sample		Soil
Date extracted	-	04/08/2023
Date analysed	-	07/08/2023
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	80

Organochlorine Pesticides in soil						
Our Reference		329661-1	329661-4	329661-7	329661-13	329661-16
Your Reference	UNITS	BH201	BH202	BH203	BH205	BH206
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.4
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	%	100	98	101	101	97

Organochlorine Pesticides in soil						
Our Reference		329661-17	329661-21	329661-25	329661-30	329661-37
Your Reference	UNITS	BH207	BH210	BH212	BH215	BH218
Depth		0-0.4	0.1-0.3	0-0.3	0-0.2	0-0.2
Date Sampled		31/07/2023	31/07/2023	2/08/2023	2/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	%	95	95	96	98	97

Organochlorine Pesticides in soil						
Our Reference		329661-39	329661-43	329661-45	329661-46	329661-47
Your Reference	UNITS	BH219	BH220	S DUP 1	S DUP 2	S DUP 3
Depth		0-0.2	0-0.2	-	-	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	%	98	96	99	99	99

Organochlorine Pesticides in soil				
Our Reference		329661-48	329661-49	329661-50
Your Reference	UNITS	S DUP 4	S DUP 5	S DUP 6
Depth		-	-	-
Date Sampled		1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	99	95

Organophosphorus Pesticides in Soil						
Our Reference		329661-1	329661-4	329661-7	329661-13	329661-16
Your Reference	UNITS	BH201	BH202	BH203	BH205	BH206
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.4
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	%	100	98	101	101	97

Organophosphorus Pesticides in Soil						
Our Reference		329661-17	329661-21	329661-25	329661-30	329661-37
Your Reference	UNITS	BH207	BH210	BH212	BH215	BH218
Depth		0-0.4	0.1-0.3	0-0.3	0-0.2	0-0.2
Date Sampled		31/07/2023	31/07/2023	2/08/2023	2/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	%	95	95	96	98	97

Organophosphorus Pesticides in Soil						
Our Reference		329661-39	329661-43	329661-45	329661-46	329661-47
Your Reference	UNITS	BH219	BH220	S DUP 1	S DUP 2	S DUP 3
Depth		0-0.2	0-0.2	-	-	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
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	%	98	96	99	99	99

Organophosphorus Pesticides in Soil				
Our Reference		329661-48	329661-49	329661-50
Your Reference	UNITS	S DUP 4	S DUP 5	S DUP 6
Depth		-	-	-
Date Sampled		1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	99	95

PCBs in Soil						
Our Reference		329661-1	329661-4	329661-7	329661-13	329661-16
Your Reference	UNITS	BH201	BH202	BH203	BH205	BH206
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.4
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Aroclor 1016	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1221	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1232	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1242	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1248	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1254	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1260	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	100	98	101	101	97

PCBs in Soil						
Our Reference		329661-17	329661-21	329661-25	329661-30	329661-37
Your Reference	UNITS	BH207	BH210	BH212	BH215	BH218
Depth		0-0.4	0.1-0.3	0-0.3	0-0.2	0-0.2
Date Sampled		31/07/2023	31/07/2023	2/08/2023	2/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Aroclor 1016	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1221	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1232	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1242	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1248	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1254	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1260	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	95	96	98	97

PCBs in Soil						
Our Reference		329661-39	329661-43	329661-45	329661-46	329661-47
Your Reference	UNITS	BH219	BH220	S DUP 1	S DUP 2	S DUP 3
Depth		0-0.2	0-0.2	-	-	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Aroclor 1016	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1221	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1232	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1242	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1248	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1254	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Aroclor 1260	mg/kg	<1.2	<1.2	<1.2	<1.2	<1.2
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	96	99	99	99

PCBs in Soil				
Our Reference		329661-48	329661-49	329661-50
Your Reference	UNITS	S DUP 4	S DUP 5	S DUP 6
Depth		-	-	-
Date Sampled		1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil
Date extracted	-	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023
Aroclor 1016	mg/kg	<1.2	<1.2	<1.2
Aroclor 1221	mg/kg	<1.2	<1.2	<1.2
Aroclor 1232	mg/kg	<1.2	<1.2	<1.2
Aroclor 1242	mg/kg	<1.2	<1.2	<1.2
Aroclor 1248	mg/kg	<1.2	<1.2	<1.2
Aroclor 1254	mg/kg	<1.2	<1.2	<1.2
Aroclor 1260	mg/kg	<1.2	<1.2	<1.2
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	95	99	95

Acid Extractable metals in soil						
Our Reference		329661-1	329661-3	329661-4	329661-6	329661-7
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0-0.2	0.8-1	0-0.2	1-1.2	0-0.2
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	19	17	35	27	29
Copper	mg/kg	100	110	110	130	84
Lead	mg/kg	24	19	18	5	32
Mercury	mg/kg	0.1	<0.1	0.1	<0.1	<0.1
Nickel	mg/kg	11	13	16	12	13
Zinc	mg/kg	84	56	61	48	89

Acid Extractable metals in soil						
Our Reference		329661-9	329661-10	329661-12	329661-13	329661-15
Your Reference	UNITS	BH203	BH204	BH204	BH205	BH205
Depth		0.8-1	0-0.2	1..7-1.8	0-0.2	0.8-1
Date Sampled		1/08/2023	31/07/2023	31/07/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Arsenic	mg/kg	<4	5	<4	4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	22	10	9	10	12
Copper	mg/kg	74	60	85	30	79
Lead	mg/kg	8	18	4	15	12
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	8	8	14	12	11
Zinc	mg/kg	17	63	21	40	35

Acid Extractable metals in soil						
Our Reference		329661-16	329661-17	329661-18	329661-19	329661-20
Your Reference	UNITS	BH206	BH207	BH208	BH208	BH209
Depth		0-0.4	0-0.4	0.1-0.3	0.7-1	0-0.3
Date Sampled		2/08/2023	31/07/2023	31/07/2023	31/07/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Arsenic	mg/kg	5	<4	<4	<4	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	21	22	19	17	16
Copper	mg/kg	97	77	71	87	67
Lead	mg/kg	38	35	11	6	34
Mercury	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	12	9	7	8	13
Zinc	mg/kg	180	120	33	19	150

Acid Extractable metals in soil						
Our Reference		329661-21	329661-23	329661-24	329661-25	329661-26
Your Reference	UNITS	BH210	BH210	BH211	BH212	BH213
Depth		0.1-0.3	1-1.3	0-0.2	0-0.3	0-0.2
Date Sampled		31/07/2023	31/07/2023	2/08/2023	2/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	1	<0.4	<0.4	<0.4
Chromium	mg/kg	3	8	29	9	27
Copper	mg/kg	27	56	97	24	140
Lead	mg/kg	12	18	23	12	29
Mercury	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Nickel	mg/kg	6	10	13	3	13
Zinc	mg/kg	28	34	77	57	98

Acid Extractable metals in soil						
Our Reference		329661-28	329661-30	329661-32	329661-34	329661-35
Your Reference	UNITS	BH214	BH215	BH216	BH216	BH217
Depth		0-0.2	0-0.2	0-0.2	1.1-1.3	0.1-0.3
Date Sampled		2/08/2023	2/08/2023	1/08/2023	1/08/2023	31/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Arsenic	mg/kg	<4	4	<4	<4	12
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	23	10	18	13	3
Copper	mg/kg	84	34	110	98	44
Lead	mg/kg	15	19	13	14	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	9	10	11	19
Zinc	mg/kg	60	56	53	44	39

Acid Extractable metals in soil						
Our Reference		329661-37	329661-39	329661-42	329661-43	329661-45
Your Reference	UNITS	BH218	BH219	BH219	BH220	S DUP 1
Depth		0-0.2	0-0.2	1.1-1.3	0-0.2	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Arsenic	mg/kg	<4	<4	<4	<4	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	27	27	5	15	11
Copper	mg/kg	120	110	40	57	32
Lead	mg/kg	15	41	3	21	19
Mercury	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	13	10	4	8	12
Zinc	mg/kg	54	100	16	68	49

Acid Extractable metals in soil						
Our Reference		329661-46	329661-47	329661-48	329661-49	329661-50
Your Reference	UNITS	S DUP 2	S DUP 3	S DUP 4	S DUP 5	S DUP 6
Depth		-	-	-	-	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	17	22	32	27	10
Copper	mg/kg	110	79	88	97	33
Lead	mg/kg	30	13	33	28	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	13	13	10	7
Zinc	mg/kg	79	52	95	77	53

Acid Extractable metals in soil		
Our Reference		329661-51
Your Reference	UNITS	TB1
Depth		-
Date Sampled		31/07/2023
Type of sample		Soil
Date prepared	-	04/08/2023
Date analysed	-	07/08/2023
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	11
Copper	mg/kg	3
Lead	mg/kg	2
Mercury	mg/kg	<0.1
Nickel	mg/kg	<1
Zinc	mg/kg	2

Moisture						
Our Reference		329661-1	329661-3	329661-4	329661-6	329661-7
Your Reference	UNITS	BH201	BH201	BH202	BH202	BH203
Depth		0-0.2	0.8-1	0-0.2	1-1.2	0-0.2
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Moisture	%	13	13	24	24	16

Moisture						
Our Reference		329661-9	329661-10	329661-12	329661-13	329661-15
Your Reference	UNITS	BH203	BH204	BH204	BH205	BH205
Depth		0.8-1	0-0.2	1..7-1.8	0-0.2	0.8-1
Date Sampled		1/08/2023	31/07/2023	31/07/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Moisture	%	31	8.5	6.9	11	9.7

Moisture						
Our Reference		329661-16	329661-17	329661-18	329661-19	329661-20
Your Reference	UNITS	BH206	BH207	BH208	BH208	BH209
Depth		0-0.4	0-0.4	0.1-0.3	0.7-1	0-0.3
Date Sampled		2/08/2023	31/07/2023	31/07/2023	31/07/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Moisture	%	14	13	25	22	19

Moisture						
Our Reference		329661-21	329661-23	329661-24	329661-25	329661-26
Your Reference	UNITS	BH210	BH210	BH211	BH212	BH213
Depth		0.1-0.3	1-1.3	0-0.2	0-0.3	0-0.2
Date Sampled		31/07/2023	31/07/2023	2/08/2023	2/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Moisture	%	3.1	10	16	8.8	17

Moisture						
Our Reference		329661-28	329661-30	329661-32	329661-34	329661-35
Your Reference	UNITS	BH214	BH215	BH216	BH216	BH217
Depth		0-0.2	0-0.2	0-0.2	1.1-1.3	0.1-0.3
Date Sampled		2/08/2023	2/08/2023	1/08/2023	1/08/2023	31/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Moisture	%	12	12	22	10	25

Moisture						
Our Reference		329661-37	329661-39	329661-42	329661-43	329661-45
Your Reference	UNITS	BH218	BH219	BH219	BH220	S DUP 1
Depth		0-0.2	0-0.2	1.1-1.3	0-0.2	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Moisture	%	29	24	11	11	13

Moisture						
Our Reference		329661-46	329661-47	329661-48	329661-49	329661-50
Your Reference	UNITS	S DUP 2	S DUP 3	S DUP 4	S DUP 5	S DUP 6
Depth		-	-	-	-	-
Date Sampled		1/08/2023	1/08/2023	1/08/2023	1/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	04/08/2023	04/08/2023	04/08/2023	04/08/2023	04/08/2023
Date analysed	-	07/08/2023	07/08/2023	07/08/2023	07/08/2023	07/08/2023
Moisture	%	14	24	20	23	13

Moisture		
Our Reference		329661-51
Your Reference	UNITS	TB1
Depth		-
Date Sampled		31/07/2023
Type of sample		Soil
Date prepared	-	04/08/2023
Date analysed	-	07/08/2023
Moisture	%	0.1

Asbestos ID - soils NEPM - ASB-001						
Our Reference		329661-2	329661-4	329661-7	329661-10	329661-13
Your Reference	UNITS	BH201	BH202	BH203	BH204	BH205
Depth		0.4-0.6	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		1/08/2023	1/08/2023	1/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	10/08/2023	10/08/2023	10/08/2023	10/08/2023	10/08/2023
Sample mass tested	g	625.91	587.98	558.3	466.08	486.49
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos#1	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	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		329661-16	329661-17	329661-18	329661-20	329661-22
Your Reference	UNITS	BH206	BH207	BH208	BH209	BH210
Depth		0-0.4	0-0.4	0.1-0.3	0-0.3	0.7-1
Date Sampled		2/08/2023	31/07/2023	31/07/2023	2/08/2023	31/07/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	10/08/2023	10/08/2023	10/08/2023	10/08/2023	10/08/2023
Sample mass tested	g	488.77	575.88	372.79	545.17	429.96
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Black 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		329661-24	329661-25	329661-26	329661-28	329661-30
Your Reference	UNITS	BH211	BH212	BH213	BH214	BH215
Depth		0-0.2	0-0.3	0-0.2	0-0.2	0-0.2
Date Sampled		2/08/2023	2/08/2023	2/08/2023	2/08/2023	2/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	10/08/2023	10/08/2023	10/08/2023	10/08/2023	10/08/2023
Sample mass tested	g	669.09	704.95	537.41	454.61	587
Sample Description	-	Brown coarse-grained soil & rocks	Brown sandy soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001						
Our Reference		329661-32	329661-35	329661-37	329661-39	329661-43
Your Reference	UNITS	BH216	BH217	BH218	BH219	BH220
Depth		0-0.2	0.1-0.3	0-0.2	0-0.2	0-0.2
Date Sampled		1/08/2023	31/07/2023	1/08/2023	1/08/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	10/08/2023	10/08/2023	10/08/2023	10/08/2023	10/08/2023
Sample mass tested	g	502.82	284.45	479.5	556.66	619.48
Sample Description	-	Brown coarse-grained soil & rocks	Black fine-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Misc Inorg - Soil				
Our Reference		329661-1	329661-23	329661-32
Your Reference	UNITS	BH201	BH210	BH216
Depth		0-0.2	1-1.3	0-0.2
Date Sampled		1/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	08/08/2023	08/08/2023	08/08/2023
Date analysed	-	08/08/2023	08/08/2023	08/08/2023
pH 1:5 soil:water	pH Units	9.2	8.6	7.4

CEC				
Our Reference		329661-1	329661-23	329661-32
Your Reference	UNITS	BH201	BH210	BH216
Depth		0-0.2	1-1.3	0-0.2
Date Sampled		1/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	09/08/2023	09/08/2023	09/08/2023
Date analysed	-	09/08/2023	09/08/2023	09/08/2023
Exchangeable Ca	meq/100g	38	27	20
Exchangeable K	meq/100g	0.5	0.3	0.1
Exchangeable Mg	meq/100g	1.9	4.0	6.7
Exchangeable Na	meq/100g	0.1	0.1	0.1
Cation Exchange Capacity	meq/100g	40	32	27

Clay 50-120g				
Our Reference		329661-1	329661-23	329661-32
Your Reference	UNITS	BH201	BH210	BH216
Depth		0-0.2	1-1.3	0-0.2
Date Sampled		1/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	08/08/2023	08/08/2023	08/08/2023
Date analysed	-	09/08/2023	09/08/2023	09/08/2023
Clay in soils <2µm	% (w/w)	17	15	46

vTRH(C6-C10)/BTEXN in Water		
Our Reference		329661-52
Your Reference	UNITS	FR1-HA
Depth		-
Date Sampled		02/08/2023
Type of sample		Water
Date extracted	-	04/08/2023
Date analysed	-	07/08/2023
TRH C_6 - C_9	µg/L	59
TRH C_6 - C_{10}	µg/L	69
TRH C_6 - C_{10} less BTEX (F1)	µg/L	69
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	%	103
Surrogate toluene-d8	%	100
Surrogate 4-BFB	%	100

svTRH (C10-C40) in Water		
Our Reference		329661-52
Your Reference	UNITS	FR1-HA
Depth		-
Date Sampled		02/08/2023
Type of sample		Water
Date extracted	-	11/08/2023
Date analysed	-	11/08/2023
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		329661-52
Your Reference	UNITS	FR1-HA
Depth		-
Date Sampled		02/08/2023
Type of sample		Water
Date extracted	-	11/08/2023
Date analysed	-	11/08/2023
Naphthalene	µg/L	<0.2
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	%	82

Metals in Waters - Acid extractable		
Our Reference		329661-52
Your Reference	UNITS	FR1-HA
Depth		-
Date Sampled		02/08/2023
Type of sample		Water
Date prepared	-	07/08/2023
Date analysed	-	08/08/2023
Arsenic - Total	mg/L	<0.05
Cadmium - Total	mg/L	<0.01
Chromium - Total	mg/L	<0.01
Copper - Total	mg/L	0.8
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-9	329661-4
Date extracted	-			04/08/2023	1	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			04/08/2023	1	04/08/2023	04/08/2023		04/08/2023	04/08/2023
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	86	117
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	86	117
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	72	101
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	80	112
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	89	120
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	95	125
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	95	128
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	75	1	94	119	23	88	107

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	329661-21
Date extracted	-			[NT]	13	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			[NT]	13	05/08/2023	05/08/2023		05/08/2023	09/08/2023
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	13	<25	<25	0	82	83
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	13	<25	<25	0	82	83
Benzene	mg/kg	0.2	Org-023	[NT]	13	<0.2	<0.2	0	68	84
Toluene	mg/kg	0.5	Org-023	[NT]	13	<0.5	<0.5	0	75	82
Ethylbenzene	mg/kg	1	Org-023	[NT]	13	<1	<1	0	85	82
m+p-xylene	mg/kg	2	Org-023	[NT]	13	<2	<2	0	91	83
o-Xylene	mg/kg	1	Org-023	[NT]	13	<1	<1	0	91	84
Naphthalene	mg/kg	1	Org-023	[NT]	13	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	13	104	104	0	83	77

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]	25	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	25	05/08/2023	05/08/2023		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	25	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	25	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	25	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	25	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	25	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	25	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	25	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	25	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	25	126	121	4	[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]	39	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	39	05/08/2023	05/08/2023		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	39	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	39	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	39	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	39	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	39	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	39	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	39	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	39	88	119	30	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	329661-4
Date extracted	-			04/08/2023	1	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			05/08/2023	1	06/08/2023	06/08/2023		06/08/2023	06/08/2023
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	104	103
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	103	110
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	114	88
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	104	103
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	103	110
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	114	88
Surrogate o-Terphenyl	%		Org-020	86	1	87	86	1	96	100

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	329661-21
Date extracted	-			[NT]	13	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			[NT]	13	06/08/2023	06/08/2023		05/08/2023	05/08/2023
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	13	<50	<50	0	109	107
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	13	<100	<100	0	112	110
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	13	<100	<100	0	129	98
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	13	<50	<50	0	109	107
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	13	<100	<100	0	112	110
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	13	<100	<100	0	129	98
Surrogate o-Terphenyl	%		Org-020	[NT]	13	85	85	0	95	102

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	25	05/08/2023	05/08/2023		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	25	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	25	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	25	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	25	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	25	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	25	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	25	86	85	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]	39	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	39	05/08/2023	05/08/2023		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	39	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
TRH $>C_{10}$ -C_{16}	mg/kg	50	Org-020	[NT]	39	<50	<50	0	[NT]	[NT]
TRH $>C_{16}$ -C_{34}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
TRH $>C_{34}$ -C_{40}	mg/kg	100	Org-020	[NT]	39	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	39	86	88	2	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	329661-4
Date extracted	-			04/08/2023	1	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			07/08/2023	1	07/08/2023	07/08/2023		07/08/2023	07/08/2023
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	93
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	85	93
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	82	88
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	88
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	86	90
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	87	91
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	89	91
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	86	90
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	78	1	91	89	2	90	95

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	329661-21
Date extracted	-			[NT]	13	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			[NT]	13	07/08/2023	07/08/2023		07/08/2023	07/08/2023
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	92	92
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	91	84
Fluorene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	86	83
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	86	100
Anthracene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	86	87
Pyrene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	91	86
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	91	89
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	13	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	13	<0.05	<0.05	0	94	71
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	13	76	77	1	90	84

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	25	07/08/2023	07/08/2023		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	25	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	25	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	25	87	89	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]	39	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	39	07/08/2023	07/08/2023		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	39	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	39	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	39	83	80	4	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	329661-4
Date extracted	-			04/08/2023	1	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			07/08/2023	1	07/08/2023	07/08/2023		07/08/2023	07/08/2023
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	92
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	92	93
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	87	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	95	97
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	88
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	101	107
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	101
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	103	102
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	84	90
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	80	89
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	101	1	100	100	0	99	107

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	329661-21
Date extracted	-			[NT]	13	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			[NT]	13	07/08/2023	07/08/2023		07/08/2023	07/08/2023
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	92	95
HCB	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	96	93
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	87	85
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	93	95
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	90	88
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	101	105
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	98	105
Endrin	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	102	113
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	88	94
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	82	85
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	13	101	98	3	103	94

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	25	07/08/2023	07/08/2023		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	25	96	95	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]	39	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	39	07/08/2023	07/08/2023		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	39	98	98	0	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	329661-4
Date extracted	-			04/08/2023	1	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			07/08/2023	1	07/08/2023	07/08/2023		07/08/2023	07/08/2023
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	109	125
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	79	87
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	100
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	108
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	92
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	87	99
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	82	88
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	101	1	100	100	0	99	107

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	329661-21
Date extracted	-			[NT]	13	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			[NT]	13	07/08/2023	07/08/2023		07/08/2023	07/08/2023
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	121	122
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	83	85
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	97	107
Malathion	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	105	108
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	90	92
Fenthion	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	91	105
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	92	97
Phosalone	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	13	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	13	101	98	3	103	94

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	25	07/08/2023	07/08/2023		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	25	96	95	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]	39	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	39	07/08/2023	07/08/2023		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	39	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	39	98	98	0	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	329661-4
Date extracted	-			04/08/2023	1	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			07/08/2023	1	07/08/2023	07/08/2023		07/08/2023	07/08/2023
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<1.2	<1.2	0	83	100
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<1.2	<1.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	101	1	100	100	0	99	107

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	329661-21
Date extracted	-			[NT]	13	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			[NT]	13	07/08/2023	07/08/2023		07/08/2023	07/08/2023
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	13	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	13	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	13	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	13	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	13	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	13	<1.2	<1.2	0	102	90
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	13	<1.2	<1.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	13	101	98	3	103	94

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	25	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	25	07/08/2023	07/08/2023		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	25	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	25	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	25	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	25	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	25	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	25	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	25	<1.2	<1.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	25	96	95	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]	39	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	39	07/08/2023	07/08/2023		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	39	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	39	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	39	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	39	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	39	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	39	<1.2	<1.2	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	39	<1.2	<1.2	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	39	98	98	0	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	329661-4
Date prepared	-			04/08/2023	1	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			07/08/2023	1	07/08/2023	07/08/2023		07/08/2023	07/08/2023
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	104	76
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	101	79
Chromium	mg/kg	1	Metals-020	<1	1	19	23	19	106	80
Copper	mg/kg	1	Metals-020	<1	1	100	110	10	106	89
Lead	mg/kg	1	Metals-020	<1	1	24	31	25	104	77
Mercury	mg/kg	0.1	Metals-021	<0.1	1	0.1	<0.1	0	78	82
Nickel	mg/kg	1	Metals-020	<1	1	11	12	9	101	80
Zinc	mg/kg	1	Metals-020	<1	1	84	96	13	102	82

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	329661-21
Date prepared	-			[NT]	13	04/08/2023	04/08/2023		04/08/2023	04/08/2023
Date analysed	-			[NT]	13	07/08/2023	07/08/2023		07/08/2023	07/08/2023
Arsenic	mg/kg	4	Metals-020	[NT]	13	4	<4	0	97	91
Cadmium	mg/kg	0.4	Metals-020	[NT]	13	<0.4	<0.4	0	94	82
Chromium	mg/kg	1	Metals-020	[NT]	13	10	10	0	96	88
Copper	mg/kg	1	Metals-020	[NT]	13	30	28	7	98	122
Lead	mg/kg	1	Metals-020	[NT]	13	15	15	0	95	80
Mercury	mg/kg	0.1	Metals-021	[NT]	13	<0.1	<0.1	0	83	89
Nickel	mg/kg	1	Metals-020	[NT]	13	12	13	8	93	86
Zinc	mg/kg	1	Metals-020	[NT]	13	40	38	5	94	89

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	25	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	25	07/08/2023	07/08/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	25	<4	4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	25	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	25	9	9	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	25	24	24	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	25	12	12	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	25	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	25	3	4	29	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	25	57	62	8	[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]	39	04/08/2023	04/08/2023		[NT]	[NT]
Date analysed	-			[NT]	39	07/08/2023	07/08/2023		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	39	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	39	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	39	27	25	8	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	39	110	100	10	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	39	41	44	7	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	39	0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	39	10	10	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	39	100	110	10	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			08/08/2023	1	08/08/2023	08/08/2023		08/08/2023	[NT]
Date analysed	-			08/08/2023	1	08/08/2023	08/08/2023		08/08/2023	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	1	9.2	9.4	2	102	[NT]

QUALITY CONTROL: CEC					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			09/08/2023	1	09/08/2023	09/08/2023		09/08/2023	[NT]
Date analysed	-			09/08/2023	1	09/08/2023	09/08/2023		09/08/2023	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	1	38	39	3	108	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	1	0.5	0.5	0	106	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	1	1.9	1.9	0	105	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	1	0.1	<0.1	0	92	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			04/08/2023	[NT]	[NT]	[NT]	[NT]	04/08/2023	[NT]
Date analysed	-			04/08/2023	[NT]	[NT]	[NT]	[NT]	07/08/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	108	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	108	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	107	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	108	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate 4-BFB	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	102	[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	-			11/08/2023	[NT]	[NT]	[NT]	[NT]	11/08/2023	[NT]
Date analysed	-			11/08/2023	[NT]	[NT]	[NT]	[NT]	11/08/2023	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	95	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	102	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	88	[NT]	[NT]	[NT]	[NT]	120	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			11/08/2023	[NT]	[NT]	[NT]	[NT]	11/08/2023	[NT]
Date analysed	-			11/08/2023	[NT]	[NT]	[NT]	[NT]	11/08/2023	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	82	[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]	88	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[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]	80	[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]	107	[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	96	[NT]	[NT]	[NT]	[NT]	104	[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	-			07/08/2023	[NT]	[NT]	[NT]	[NT]	07/08/2023	[NT]
Date analysed	-			08/08/2023	[NT]	[NT]	[NT]	[NT]	08/08/2023	[NT]
Arsenic - Total	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	109	[NT]
Cadmium - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	103	[NT]
Chromium - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	103	[NT]
Copper - Total	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	105	[NT]
Lead - Total	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	109	[NT]
Mercury - Total	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	117	[NT]
Nickel - Total	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	107	[NT]
Zinc - Total	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	104	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

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, sample 329661-35 is below the minimum recommended 500mL sample volume as per National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.

Envirolab Services Pty Ltd
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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	Katrina Taylor

Sample Login Details	
Your reference	E34300PT2, Warrawong
Envirolab Reference	329661
Date Sample Received	03/08/2023
Date Instructions Received	03/08/2023
Date Results Expected to be Reported	11/08/2023

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	53 Soil, 1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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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	CEC	Clay 50-120g	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Waters -Acid extractable	On Hold
BH201-0-0.2	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓					
BH201-0.4-0.6								✓								
BH201-0.8-1	✓	✓	✓				✓									
BH202-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
BH202-0.4-0.6																✓
BH202-1-1.2	✓	✓	✓				✓									
BH203-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
BH203-0.4-0.6																✓
BH203-0.8-1	✓	✓	✓				✓									
BH204-0-0.2	✓	✓	✓				✓	✓								
BH204-0.5-0.95																✓
BH204-1..7-1.8	✓	✓	✓				✓									
BH205-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
BH205-0.4-0.5																✓
BH205-0.8-1	✓	✓	✓				✓									
BH206-0-0.4	✓	✓	✓	✓	✓	✓	✓	✓								
BH207-0-0.4	✓	✓	✓	✓	✓	✓	✓	✓								
BH208-0.1-0.3	✓	✓	✓				✓	✓								
BH208-0.7-1	✓	✓	✓				✓									
BH209-0-0.3	✓	✓	✓				✓	✓								
BH210-0.1-0.3	✓	✓	✓	✓	✓	✓	✓									
BH210-0.7-1								✓								
BH210-1-1.3	✓	✓	✓				✓		✓	✓	✓					
BH211-0-0.2	✓	✓	✓				✓	✓								
BH212-0-0.3	✓	✓	✓	✓	✓	✓	✓	✓								
BH213-0-0.2	✓	✓	✓				✓	✓								
BH213-0.4-0.6																✓
BH214-0-0.2	✓	✓	✓				✓	✓								
BH214-0.4-0.6																✓
BH215-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
BH215-0.4-0.6																✓
BH216-0-0.2	✓	✓	✓				✓	✓	✓	✓	✓					

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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	CEC	Clay 50-120g	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Waters -Acid extractable	On Hold
BH216-0.4-0.6																✓
BH216-1.1-1.3	✓	✓	✓				✓									
BH217-0.1-0.3	✓	✓	✓				✓	✓								
BH217-0.7-1																✓
BH218-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
BH218-0.4-0.6																✓
BH219-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
BH219-0.4-0.6																✓
BH219-0.8-1																✓
BH219-1.1-1.3	✓	✓	✓				✓									
BH220-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓								
BH220-0.4-0.6																✓
S DUP 1	✓	✓	✓	✓	✓	✓	✓									
S DUP 2	✓	✓	✓	✓	✓	✓	✓									
S DUP 3	✓	✓	✓	✓	✓	✓	✓									
S DUP 4	✓	✓	✓	✓	✓	✓	✓									
S DUP 5	✓	✓	✓	✓	✓	✓	✓									
S DUP 6	✓	✓	✓	✓	✓	✓	✓									
TB1	✓	✓	✓				✓									
FR1-HA												✓	✓	✓	✓	
BH208-0.1-0.3																✓
BH204-4.3-4.4																✓

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: E34300PT2 Date Results Required: STANDARD Page: 1 of 3	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: KTaylor@jkenvironments.com.au

Location: Warrawong

Sampler: OB

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	#6	#6aNEPM	Asbestos NEPM	#3aNEPM	#3	pH, CEC and clay content	Asbestos (Detection)	BTEX					
1/08/2023	1	BH201	0-0.2	G, A	1.5	F: Silty Clay	X					X							
1/08/2023	2	BH201	0.4-0.6	G,A	2.0	F: Silty Sandy Clay			X										
1/08/2023	3	BH201	0.8-1	G,A	1.0	F: Silty Sandy Clay					X								
1/08/2023	4	BH202	0-0.2	G,A	1.0	F: Silty Sandy Clay		X											
1/08/2023	5	BH202	0.4-0.6	G,A	1.9	F: Silty Sandy Clay													
1/08/2023	6	BH202	1-1.2	G,A	1.7	Silty Sandy Clay					X								
1/08/2023	7	BH203	0-0.2	G,A	0.9	F: Silty Sandy Clay		X											
1/08/2023	8	BH203	0.4-0.6	G,A	1.8	F: Silty Sandy Clay													
1/08/2023	9	BH203	0.8-1	G, A	1.1	Silty Clay					X								
31/07/2023	10	BH204	0-0.2	G, A	0.0	F: Silty Clay				X									
31/07/2023	11	BH204	0.5-0.95	G, A	0.1	F: Silty Sandy Clay													
31/07/2023	12	BH204	1..7-1.8	G, A	0.0	F: Silty Sandy Clay					X								
1/08/2023	13	BH205	0-0.2	G,A	1.2	F: Silty Clay		X											
1/08/2023	14	BH205	0.4-0.5	G,A	3.2	F: Silty Clay													
1/08/2023	15	BH205	0.8-1	G,A	1.0	F: Silty Clay					X								
2/08/2023	16	BH206	0-0.4	G, A	1.9	F: Silty Sandy Clay		X											
31/07/2023	17	BH207	0-0.4	G,A	0.0	F: Silty Clay		X											
31/07/2023	18	BH208	0.1-0.3	G,A	0.0	F: Silty Clay				X									
31/07/2023	19	BH208	0.7-1	G	0.0	Silty Sandy Clay					X								
2/08/2023	20	BH209	0-0.3	G, A	1.5	F: Silty Clay				X									
31/07/2023	21	BH210	0.1-0.3	G,A	0.0	F: Silty Clay	X												
31/07/2023	22	BH210	0.7-1	G,A	0.0	F: Silty Clay			X										
31/07/2023	23	BH210	1-1.3	G,A	0.0	F: Gravelly Clay					X	X							
2/08/2023	24	BH211	0-0.2	G, A	2.4	F: Silty Sandy Clay				X									
2/08/2023	25	BH212	0-0.3	G, A	2.3	F: Silty Sandy Clay		X											

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar G1 - 500mL Amber Glass Bottle
A - Ziplock Asbestos Bag
V - BTEX Vial H - HNO3 Wash PVC

Relinquished By:	Date:	Time:	Received By:	Date:
OB	3/8/23	1630	ELS	3/8/23

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 329661

Date Received: 3/8/23
Time Received: 1630
Received By:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

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: E34300PT2 Date Results Required: STANDARD Page: 2 of 3	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: KTaylor@jkenvironments.com.au

Location: Warrawong

Sampler: OB

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	#6	#6aNEPM	#3aNEPM	#3	pH, CEC and clay content	Asbestos (Detection)	BTEX					
2/08/2023	26	BH213	0-0.2	G, A	2.1	F: Silty Sandy Clay			X									
2/08/2023	27	BH213	0.4-0.6	G, A	0.8	F: Silty Sandy Clay												
2/08/2023	28	BH214	0-0.2	G, A	0.5	F: Silty Sandy Clay			X									
2/08/2023	29	BH214	0.4-0.6	G, A	0.8	F: Silty Sandy Clay												
2/08/2023	30	BH215	0-0.2	G, A	0.8	F: Silty Sandy Clay		X										
2/08/2023	31	BH215	0.4-0.6	G, A	1.1	F: Silty Sandy Clay												
1/08/2023	32	BH216	0-0.2	G,A	1.4	F: Silty Sandy Clay			X		X							
1/08/2023	33	BH216	0.4-0.6	G,A	3.2	F: Silty Sandy Clay												
1/08/2023	34	BH216	1.1-1.3	G, A	1.5	Silty Sandy Clay				X								
31/07/2023	35	BH217	0.1-0.3	G,A	0.0	F: Silty Clay			X									
31/07/2023	36	BH217	0.7-1	G,A	0.0	F: Silty Clay												
1/08/2023	37	BH218	0-0.2	G, A	3.3	F: Silty Clay		X										
1/08/2023	38	BH218	0.4-0.6	G, A	2.4	F: Silty Clay												
1/08/2023	39	BH219	0-0.2	G, A	1.3	F: Silty Sandy Clay		X										
1/08/2023	40	BH219	0.4-0.6	G, A	2.5	F: Silty Sandy Clay												
1/08/2023	41	BH219	0.8-1	G, A	2.3	F: Silty Sandy Clay												
1/08/2023	42	BH219	1.1-1.3	G, A	2.4	F: Silty Sandy Clay				X								
1/08/2023	43	BH220	0-0.2	G, A	1.7	F: Silty Sandy Clay		X										
1/08/2023	44	BH220	0.4-0.6	G, A	3.2	F: Silty Sandy Clay												
1/08/2023	45	S DUP 1	-	G	-	-	X											
1/08/2023	46	S DUP 2	-	G	-	-	X											
1/08/2023	47	S DUP 3	-	G	-	-	X											
1/08/2023	48	S DUP 4	-	G	-	-	X											
1/08/2023	49	S DUP 5	-	G	-	-	X											
50 2/08/2023	[illegible]	S DUP 6	-	G	-	-	X											

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar G1 - 500mL Amber Glass Bottle
A - Ziplock Asbestos Bag
V - BTEX Vial H - HNO3 Wash PVC

Relinquished By:	Date:	Time:	Received By:	Date:
OB	3/8/23			

329661
3/8/23
1630
AM

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: E34300PT2 Date Results Required: STANDARD Page: 3 of 3	**FROM:** JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: KTaylor@jkenvironments.com.au

Location: Warrawong

Sampler: OB

Sample Preserved in Esky on Ice

Tests Required

	Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	#6	#6aNEPM	#3aNEPM	#3	pH, CEC and clay content	Asbestos (Detection)	BTEX					
51	31/7-2/8/23	80	~~TB1~~ TB1	-	V	-	Sand				X								
	31/7-2/8/23		~~TS1~~	-	V	-	Sand							X					
AM 52	2/08/2023	~~51~~	FR1-HA	-	G1, H, V	-	Water				X								
Extra		53	BH204	0.1-0.3															
Extra		54	BH204	4.3-4.4															
			TS1	smashed															

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
G1 - 500mL Amber Glass Bottle
A - Ziplock Asbestos Bag
V - BTEX Vial
H - HNO3 Wash PVC

Relinquished By:	Date:	Time:	Received By:	Date:
OB	3/8/23			

329661
3/8/23
1630
AM

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www.envirolab.com.au

CERTIFICATE OF ANALYSIS 329661-A

Client Details

Client	JK Environments
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E34300PT2, Warrawong**
Number of Samples	Additional analyses
Date samples received	03/08/2023
Date completed instructions received	24/08/2023

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	29/08/2023
Date of Issue	29/08/2023

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

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

Results Approved By
Diego Bigolin, Inorganics Supervisor
Hannah Nguyen, Metals Supervisor
Liam Timmins, Organics Supervisor
Loren Bardwell, Development Chemist
Lucy Zhu, Asbestos Supervisor

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		329661-A-27	329661-A-31	329661-A-36	329661-A-42
Your Reference	UNITS	BH213	BH215	BH217	BH219
Depth		0.4-0.6	0.4-0.6	0.7-1	1.1-1.3
Date Sampled		2/08/2023	2/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	25/08/2023	25/08/2023	25/08/2023	25/08/2023
Date analysed	-	28/08/2023	28/08/2023	28/08/2023	28/08/2023
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	98	103	93	103

svTRH (C10-C40) in Soil					
Our Reference		329661-A-27	329661-A-31	329661-A-36	329661-A-42
Your Reference	UNITS	BH213	BH215	BH217	BH219
Depth		0.4-0.6	0.4-0.6	0.7-1	1.1-1.3
Date Sampled		2/08/2023	2/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	25/08/2023	25/08/2023	25/08/2023	25/08/2023
Date analysed	-	28/08/2023	28/08/2023	28/08/2023	28/08/2023
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	80	81	81

PAHs in Soil					
Our Reference		329661-A-27	329661-A-31	329661-A-36	329661-A-42
Your Reference	UNITS	BH213	BH215	BH217	BH219
Depth		0.4-0.6	0.4-0.6	0.7-1	1.1-1.3
Date Sampled		2/08/2023	2/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	25/08/2023	25/08/2023	25/08/2023	25/08/2023
Date analysed	-	25/08/2023	25/08/2023	25/08/2023	25/08/2023
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	86	103	103	103

Acid Extractable metals in soil					
Our Reference		329661-A-27	329661-A-31	329661-A-36	329661-A-42
Your Reference	UNITS	BH213	BH215	BH217	BH219
Depth		0.4-0.6	0.4-0.6	0.7-1	1.1-1.3
Date Sampled		2/08/2023	2/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	29/08/2023	29/08/2023	29/08/2023	29/08/2023
Date analysed	-	29/08/2023	29/08/2023	29/08/2023	29/08/2023
Arsenic	mg/kg	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	<1	<1	<1	<1
Copper	mg/kg	9	2	4	5
Lead	mg/kg	<1	<1	<1	<1
Mercury	mg/kg	0.2	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	<1	<1	<1
Zinc	mg/kg	<1	2	2	1

Moisture					
Our Reference		329661-A-27	329661-A-31	329661-A-36	329661-A-42
Your Reference	UNITS	BH213	BH215	BH217	BH219
Depth		0.4-0.6	0.4-0.6	0.7-1	1.1-1.3
Date Sampled		2/08/2023	2/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	28/08/2023	28/08/2023	28/08/2023	28/08/2023
Date analysed	-	29/08/2023	29/08/2023	29/08/2023	29/08/2023
Moisture	%	25	9.5	20	13

Asbestos ID - soils NEPM - ASB-001		
Our Reference		329661-A-5
Your Reference	UNITS	BH202
Depth		0.4-0.6
Date Sampled		1/08/2023
Type of sample		Soil
Date analysed	-	29/08/2023
Sample mass tested	g	471.15
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected
Total Asbestos#1	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
ACM >7mm Estimation*	%(w/w)	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001

Misc Inorg - Soil				
Our Reference		329661-A-6	329661-A-19	329661-A-34
Your Reference	UNITS	BH202	BH208	BH216
Depth		1-1.2	0.7-1	1.1-1.3
Date Sampled		1/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	28/08/2023	28/08/2023	28/08/2023
Date analysed	-	28/08/2023	28/08/2023	28/08/2023
pH 1:5 soil:water	pH Units	7.2	7.5	7.5

CEC				
Our Reference		329661-A-6	329661-A-19	329661-A-34
Your Reference	UNITS	BH202	BH208	BH216
Depth		1-1.2	0.7-1	1.1-1.3
Date Sampled		1/08/2023	31/07/2023	1/08/2023
Type of sample		Soil	Soil	Soil
Date prepared	-	29/08/2023	29/08/2023	29/08/2023
Date analysed	-	29/08/2023	29/08/2023	29/08/2023
Exchangeable Ca	meq/100g	12	12	9.1
Exchangeable K	meq/100g	<0.1	0.1	<0.1
Exchangeable Mg	meq/100g	21	16	12
Exchangeable Na	meq/100g	0.6	1	0.4
Cation Exchange Capacity	meq/100g	33	29	21

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
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-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	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-1	[NT]
Date extracted	-			25/08/2023	[NT]	[NT]	[NT]	[NT]	25/08/2023	[NT]
Date analysed	-			28/08/2023	[NT]	[NT]	[NT]	[NT]	28/08/2023	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	100	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	100	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	104	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	107	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			25/08/2023	[NT]	[NT]	[NT]	[NT]	25/08/2023	[NT]
Date analysed	-			28/08/2023	[NT]	[NT]	[NT]	[NT]	28/08/2023	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	86	[NT]
Surrogate o-Terphenyl	%		Org-020	89	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			25/08/2023	[NT]	[NT]	[NT]	[NT]	25/08/2023	[NT]
Date analysed	-			25/08/2023	[NT]	[NT]	[NT]	[NT]	25/08/2023	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	103	[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]	111	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[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]	86	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[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]	109	[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]	114	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	106	[NT]	[NT]	[NT]	[NT]	86	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date prepared	-			29/08/2023	[NT]	[NT]	[NT]	[NT]	29/08/2023	[NT]
Date analysed	-			29/08/2023	[NT]	[NT]	[NT]	[NT]	29/08/2023	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	110	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	123	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			28/08/2023	[NT]	[NT]	[NT]	[NT]	28/08/2023	[NT]
Date analysed	-			28/08/2023	[NT]	[NT]	[NT]	[NT]	28/08/2023	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: CEC					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	329661-A-6
Date prepared	-			29/08/2023	[NT]	[NT]	[NT]	[NT]	29/08/2023	29/08/2023
Date analysed	-			29/08/2023	[NT]	[NT]	[NT]	[NT]	29/08/2023	29/08/2023
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	96	113
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	104	100
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	104	104
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	95	92

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

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

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SAMPLE RECEIPT ADVICE

Client Details	
Client	JK Environments
Attention	Katrina Taylor

Sample Login Details	
Your reference	E34300PT2, Warrawong
Envirolab Reference	329661-A
Date Sample Received	03/08/2023
Date Instructions Received	24/08/2023
Date Results Expected to be Reported	29/08/2023

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	Additional analyses
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	14
Cooling Method	Ice
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	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	Misc Inorg - Soil	CEC	On Hold
BH201-0-0.2								✓
BH201-0.4-0.6								✓
BH201-0.8-1								✓
BH202-0-0.2								✓
BH202-0.4-0.6					✓			
BH202-1-1.2						✓	✓	
BH203-0-0.2								✓
BH203-0.4-0.6								✓
BH203-0.8-1								✓
BH204-0-0.2								✓
BH204-0.5-0.95								✓
BH204-1..7-1.8								✓
BH205-0-0.2								✓
BH205-0.4-0.5								✓
BH205-0.8-1								✓
BH206-0-0.4								✓
BH207-0-0.4								✓
BH208-0.1-0.3								✓
BH208-0.7-1						✓	✓	
BH209-0-0.3								✓
BH210-0.1-0.3								✓
BH210-0.7-1								✓
BH210-1-1.3								✓
BH211-0-0.2								✓
BH212-0-0.3								✓
BH213-0-0.2								✓
BH213-0.4-0.6	✓	✓	✓	✓				
BH214-0-0.2								✓
BH214-0.4-0.6								✓
BH215-0-0.2								✓
BH215-0.4-0.6	✓	✓	✓	✓				
BH216-0-0.2								✓

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	Acid Extractable metalsin soil	Asbestos ID - soils NEPM - ASB-001	Misc Inorg - Soil	CEC	On Hold
BH216-0.4-0.6								✓
BH216-1.1-1.3						✓	✓	
BH217-0.1-0.3								✓
BH217-0.7-1	✓	✓	✓	✓				
BH218-0-0.2								✓
BH218-0.4-0.6								✓
BH219-0-0.2								✓
BH219-0.4-0.6								✓
BH219-0.8-1								✓
BH219-1.1-1.3	✓	✓	✓	✓				
BH220-0-0.2								✓
BH220-0.4-0.6								✓
S DUP 1								✓
S DUP 2								✓
S DUP 3								✓
S DUP 4								✓
S DUP 5								✓
S DUP 6								✓
TB1								✓
FR1-HA								✓
BH208-0.1-0.3								✓
BH204-4.3-4.4								✓

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

Additional Info

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.

Anna Bui

From: Katrina Taylor <KTaylor@jkenvironments.com.au>
Sent: Thursday, 24 August 2023 3:47 PM
To: Samplereceipt
Subject: RE: Results for Registration 329661 E34300PT2, Warrawong

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Afternoon,

Please schedule the following samples on 3 day TA:
#3
27 BH213 (0.4-0.6)
31 BH215 (0.4-0.6)
36 BH217 (0.7-1.0)
42 BH219 (1.1-1.3)

ELS REF: 329661-A
TAT : 3 DAY
DUE: 29/8/23
AB.

Asbestos 500ml (NEPM)
5 BH202 (0.4-0.6)

pH & CEC
6 BH202 (1-1.2)
19 BH208 (0.7-1.0)
34 BH216 (1-1.3)

Regards
Katrina Taylor
Associate | Environmental Scientist
NSW Licensed Asbestos Assessor

T: +612 9888 5000
D: 0418 481 628
E: KTaylor@jkenvironments.com.au
www.jkenvironments.com.au

PO Box 976
NORTH RYDE BC NSW 1670
115 Wicks Road
MACQUARIE PARK NSW 2113

JKEnvironments

From: Stuart Chen <SChen2@envirolab.com.au>
Sent: Friday, 11 August 2023 5:21 PM
To: Katrina Taylor <KTaylor@jkenvironments.com.au>
Subject: Results for Registration 329661 E34300PT2, Warrawong

This message originated outside the JKG network. If this looks to be from a staff member, it is likely to be malicious (spam/phish attack). Do not click links of open attachments unless you recognise the sender and know the content is safe.

Please refer to attached for:
a copy of the Certificate of Analysis

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

CERTIFICATE OF ANALYSIS 330588

Client Details

Client	JK Environments
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E34300PT2, Warrawong**
Number of Samples	21 Soil, 1 Material
Date samples received	15/08/2023
Date completed instructions received	15/08/2023

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	23/08/2023
Date of Issue	23/08/2023

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

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

Results Approved By
Dragana Tomas, Senior Chemist
Loren Bardwell, Development Chemist
Lucy Zhu, Asbestos Supervisor

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		330588-1	330588-2	330588-3	330588-5	330588-6
Your Reference	UNITS	BH221	BH221	BH222	BH223	BH223
Depth		0-0.1	0.4-0.55	0-0.1	0-0.1	0.3-0.4
Date Sampled		15/08/2023	15/08/2023	15/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
Date analysed	-	17/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
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	107	100	91	87

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		330588-8	330588-14	330588-15	330588-16	330588-21
Your Reference	UNITS	BH223	BH224	BH224	BH224	TB-201
Depth		1.0-1.2	0-0.1	0.3-0.5	0.75-0.95	-
Date Sampled		14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
Date analysed	-	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
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	%	95	78	78	107	94

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		330588-22
Your Reference	UNITS	TS-S201
Depth		-
Date Sampled		14/08/2023
Type of sample		Soil
Date extracted	-	16/08/2023
Date analysed	-	18/08/2023
Benzene	mg/kg	97%
Toluene	mg/kg	97%
Ethylbenzene	mg/kg	97%
m+p-xylene	mg/kg	97%
o-Xylene	mg/kg	96%
Surrogate aaa-Trifluorotoluene	%	96

svTRH (C10-C40) in Soil						
Our Reference		330588-1	330588-2	330588-3	330588-5	330588-6
Your Reference	UNITS	BH221	BH221	BH222	BH223	BH223
Depth		0-0.1	0.4-0.55	0-0.1	0-0.1	0.3-0.4
Date Sampled		15/08/2023	15/08/2023	15/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
Date analysed	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
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	%	88	86	88	91	88

svTRH (C10-C40) in Soil						
Our Reference		330588-8	330588-14	330588-15	330588-16	330588-21
Your Reference	UNITS	BH223	BH224	BH224	BH224	TB-201
Depth		1.0-1.2	0-0.1	0.3-0.5	0.75-0.95	-
Date Sampled		14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
Date analysed	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
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	%	87	87	89	88	88

PAHs in Soil						
Our Reference		330588-1	330588-2	330588-3	330588-5	330588-6
Your Reference	UNITS	BH221	BH221	BH222	BH223	BH223
Depth		0-0.1	0.4-0.55	0-0.1	0-0.1	0.3-0.4
Date Sampled		15/08/2023	15/08/2023	15/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
Date analysed	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
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	%	86	80	84	87	86

PAHs in Soil						
Our Reference		330588-8	330588-14	330588-15	330588-16	330588-21
Your Reference	UNITS	BH223	BH224	BH224	BH224	TB-201
Depth		1.0-1.2	0-0.1	0.3-0.5	0.75-0.95	-
Date Sampled		14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
Date analysed	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
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	%	82	84	84	81	83

Organochlorine Pesticides in soil			
Our Reference		330588-1	330588-3
Your Reference	UNITS	BH221	BH222
Depth		0-0.1	0-0.1
Date Sampled		15/08/2023	15/08/2023
Type of sample		Soil	Soil
Date extracted	-	16/08/2023	16/08/2023
Date analysed	-	16/08/2023	16/08/2023
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	%	91	94

Organophosphorus Pesticides in Soil			
Our Reference		330588-1	330588-3
Your Reference	UNITS	BH221	BH222
Depth		0-0.1	0-0.1
Date Sampled		15/08/2023	15/08/2023
Type of sample		Soil	Soil
Date extracted	-	16/08/2023	16/08/2023
Date analysed	-	16/08/2023	16/08/2023
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	%	91	94

PCBs in Soil			
Our Reference		330588-1	330588-3
Your Reference	UNITS	BH221	BH222
Depth		0-0.1	0-0.1
Date Sampled		15/08/2023	15/08/2023
Type of sample		Soil	Soil
Date extracted	-	16/08/2023	16/08/2023
Date analysed	-	16/08/2023	16/08/2023
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	%	91	94

Acid Extractable metals in soil						
Our Reference		330588-1	330588-2	330588-3	330588-5	330588-6
Your Reference	UNITS	BH221	BH221	BH222	BH223	BH223
Depth		0-0.1	0.4-0.55	0-0.1	0-0.1	0.3-0.4
Date Sampled		15/08/2023	15/08/2023	15/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Date analysed	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	19	20	26	17	17
Copper	mg/kg	57	93	84	60	76
Lead	mg/kg	21	28	37	19	20
Mercury	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Nickel	mg/kg	12	12	12	7	9
Zinc	mg/kg	65	160	120	100	81

Acid Extractable metals in soil						
Our Reference		330588-8	330588-14	330588-15	330588-16	330588-21
Your Reference	UNITS	BH223	BH224	BH224	BH224	TB-201
Depth		1.0-1.2	0-0.1	0.3-0.5	0.75-0.95	-
Date Sampled		14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Date analysed	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Arsenic	mg/kg	<4	7	7	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	10	14	16	20	3
Copper	mg/kg	73	22	27	64	<1
Lead	mg/kg	2	10	10	14	3
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	13	17	7	<1
Zinc	mg/kg	32	47	53	27	3

Moisture						
Our Reference		330588-1	330588-2	330588-3	330588-5	330588-6
Your Reference	UNITS	BH221	BH221	BH222	BH223	BH223
Depth		0-0.1	0.4-0.55	0-0.1	0-0.1	0.3-0.4
Date Sampled		15/08/2023	15/08/2023	15/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
Date analysed	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Moisture	%	20	18	28	32	30

Moisture						
Our Reference		330588-8	330588-14	330588-15	330588-16	330588-21
Your Reference	UNITS	BH223	BH224	BH224	BH224	TB-201
Depth		1.0-1.2	0-0.1	0.3-0.5	0.75-0.95	-
Date Sampled		14/08/2023	14/08/2023	14/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/08/2023	16/08/2023	16/08/2023	16/08/2023	16/08/2023
Date analysed	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Moisture	%	9.2	13	11	24	0.6

Asbestos ID - soils NEPM - ASB-001				
Our Reference		330588-2	330588-6	330588-14
Your Reference	UNITS	BH221	BH223	BH224
Depth		0.4-0.55	0.3-0.4	0-0.1
Date Sampled		15/08/2023	14/08/2023	14/08/2023
Type of sample		Soil	Soil	Soil
Date analysed	-	23/08/2023	23/08/2023	23/08/2023
Sample mass tested	g	491.21	376.81	900.57
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Grey coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–
FA and AF Estimation*	g	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001

Asbestos ID - materials		
Our Reference		330588-20
Your Reference	UNITS	FCF-201
Depth		SURFACE
Date Sampled		14/08/2023
Type of sample		Material
Date analysed	-	17/08/2023
Mass / Dimension of Sample	-	4.84g
Sample Description	-	Grey fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected
Trace Analysis	-	[NT]

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.

Method ID	Methodology Summary
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	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 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	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-15	330588-3
Date extracted	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
Date analysed	-			18/08/2023	1	17/08/2023	17/08/2023		17/08/2023	18/08/2023
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	108	123
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	108	123
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	118	134
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	109	123
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	106	120
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	104	118
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	108	122
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	124	1	108	91	17	89	94

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-16	330588-3
Date extracted	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
Date analysed	-			17/08/2023	1	17/08/2023	17/08/2023		17/08/2023	17/08/2023
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	115	115
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	<100	<100	0	119	119
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	129	82
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	115	115
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	<100	<100	0	119	119
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	129	82
Surrogate o-Terphenyl	%		Org-020	88	1	88	88	0	93	101

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-16	330588-3
Date extracted	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
Date analysed	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	80
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	89	85
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	86
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	84
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	92	88
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	87
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	75	77
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	90	86
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	85	1	86	86	0	84	84

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-16	330588-3
Date extracted	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
Date analysed	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	92
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	98	94
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	99	93
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	93	93
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	88
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	103	101
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	98
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	96
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	94	90
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	89	85
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	88	1	91	89	2	103	100

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-16	330588-3
Date extracted	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
Date analysed	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	117	109
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	91	87
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	113	117
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	99	97
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	88
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	101	109
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	80	84
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	88	1	91	89	2	103	100

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-16	330588-3
Date extracted	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
Date analysed	-			16/08/2023	1	16/08/2023	16/08/2023		16/08/2023	16/08/2023
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	99	90
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	88	1	91	89	2	103	100

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-15	330588-3
Date prepared	-			17/08/2023	1	17/08/2023	17/08/2023		17/08/2023	17/08/2023
Date analysed	-			17/08/2023	1	17/08/2023	17/08/2023		17/08/2023	17/08/2023
Arsenic	mg/kg	4	Metals-020	<4	1	<4	5	22	109	93
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	100	88
Chromium	mg/kg	1	Metals-020	<1	1	19	14	30	117	93
Copper	mg/kg	1	Metals-020	<1	1	57	40	35	101	107
Lead	mg/kg	1	Metals-020	<1	1	21	25	17	122	93
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	107	108
Nickel	mg/kg	1	Metals-020	<1	1	12	12	0	103	88
Zinc	mg/kg	1	Metals-020	<1	1	65	65	0	108	90

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

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

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	Katrina Taylor

Sample Login Details	
Your reference	E34300PT2, Warrawong
Envirolab Reference	330588
Date Sample Received	15/08/2023
Date Instructions Received	15/08/2023
Date Results Expected to be Reported	23/08/2023

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	21 Soil, 1 Material
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	5
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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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	Asbestos ID - materials	On Hold
BH221-0-0.1	✓	✓	✓	✓	✓	✓	✓			
BH221-0.4-0.55	✓	✓	✓				✓	✓		
BH222-0-0.1	✓	✓	✓	✓	✓	✓	✓			
BH222-0.3-0.4										✓
BH223-0-0.1	✓	✓	✓				✓			
BH223-0.3-0.4	✓	✓	✓				✓	✓		
BH223-0.5-0.65										✓
BH223-1.0-1.2	✓	✓	✓				✓			
BH223-1.5-1.6										✓
BH223-1.8-2.0										✓
BH223-2.8-3.0										✓
BH223-3.8-4.0										✓
BH223-4.2-4.3										✓
BH224-0-0.1	✓	✓	✓				✓	✓		
BH224-0.3-0.5	✓	✓	✓				✓			
BH224-0.75-0.95	✓	✓	✓				✓			
BH224-1.5-1.7										✓
BH224-2.3-2.5										✓
SDUP201										✓
FCF-201-SURFACE									✓	
TB-201	✓	✓	✓				✓			
TS-S201	✓									

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:** E34300PT2 **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:** ktaylor@jkenvironments.com.au

Location: Warrawong **Sample Preserved in Esky on Ice**

Sampler: K. Taylor **Tests Required**

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	#6	#6aNEPM	#3aNEPM	#3	pH, CEC and clay content	Asbestos (Detection)	BTEX					
15/08/2023	1	BH221	0-0.1	G, A	0.1	FILL	X											
15/08/2023	2	BH221	0.4-0.55	G, A	0	FILL			X									
15/08/2023	3	BH222	0-0.1	G, A	0.2	FILL	X											
15/08/2023	4	BH222	0.3-0.4	G, A	0.1	FILL												
14/08/2023	5	BH223	0-0.1	G, A	0	FILL				X								
14/08/2023	6	BH223	0.3-0.4	G, A	0	FILL			X									
14/08/2023	7	BH223	0.5-0.65	G, A	0.1	FILL												
14/08/2023	8	BH223	1.0-1.2	G, A	0	FILL				X								
14/08/2023	9	BH223	1.5-1.6	G, A	0	FILL												
14/08/2023	10	BH223	1.8-2.0	G, A	0	FILL												
14/08/2023	11	BH223	2.8-3.0	G, A	0	FILL												
14/08/2023	12	BH223	3.8-4.0	G, A	0	FILL												
14/08/2023	13	BH223	4.2-4.3	G, A	0	NATURAL												
14/08/2023	14	BH224	0-0.1	G, A	0.3	FILL			X									
14/08/2023	15	BH224	0.3-0.5	G, A	0	FILL				X								
14/08/2023	16	BH224	0.75-0.95	G, A	0.1	NATURAL				X								
14/08/2023	17	BH224	1.5-1.7	G, A	0	NATURAL												
14/08/2023	18	BH224	2.3-2.5	G, A	0	NATURAL												
15/08/2023	19	SDUP201	-	G	-	FILL												
14/08/2023	20	FCF-201	SURFACE	A	-							X						
14/08/2023	21	TB-201	-	G	-					X								
14/08/2023	22	TS-S201	-	G	-								X					

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 330588
Date Received: 15/8/23
Time Received: 1700
Received By: EW
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None
5·C.

Remarks (comments/detection limits required):

Sample Containers:
G - 250mg Glass Jar
A - Ziplock Asbestos Bag
P - Plastic Bag

Relinquished By: K. Taylor	Date: 15.08.23	Time: 1700	Received By: EW	Date: 15/8.

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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 330588-A

Client Details

Client	JK Environments
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E34300PT2, Warrawong**
Number of Samples	21 Soil, 1 Material
Date samples received	15/08/2023
Date completed instructions received	24/08/2023

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	29/08/2023
Date of Issue	29/08/2023

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Nyovan Moonean
Authorised by Asbestos Approved Signatory: Lucy Zhu
Results Approved By
Lucy Zhu, Asbestos Supervisor

Authorised By
Nancy Zhang, Laboratory Manager

Asbestos ID - soils NEPM - ASB-001			
Our Reference		330588-A-3	330588-A-15
Your Reference	UNITS	BH222	BH224
Depth		0-0.1	0.3-0.5
Date Sampled		15/08/2023	14/08/2023
Type of sample		Soil	Soil
Date analysed	-	29/08/2023	29/08/2023
Sample mass tested	g	456.07	695.77
Sample Description	-	Brown coarse-grained soil & rocks	Grey coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–
FA and AF Estimation*	g	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.

Result Definitions

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

Report Comments

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

Envirolab Services Pty Ltd
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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details	
Client	JK Environments
Attention	Katrina Taylor

Sample Login Details	
Your reference	E34300PT2, Warrawong
Envirolab Reference	330588-A
Date Sample Received	15/08/2023
Date Instructions Received	24/08/2023
Date Results Expected to be Reported	29/08/2023

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	21 Soil, 1 Material
Turnaround Time Requested	3 days
Temperature on Receipt (°C)	5
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	Asbestos ID - soils NEPM - ASB-001	On Hold
BH221-0-0.1		✓
BH221-0.4-0.55		✓
BH222-0-0.1	✓	
BH222-0.3-0.4		✓
BH223-0-0.1		✓
BH223-0.3-0.4		✓
BH223-0.5-0.65		✓
BH223-1.0-1.2		✓
BH223-1.5-1.6		✓
BH223-1.8-2.0		✓
BH223-2.8-3.0		✓
BH223-3.8-4.0		✓
BH223-4.2-4.3		✓
BH224-0-0.1		✓
BH224-0.3-0.5	✓	
BH224-0.75-0.95		✓
BH224-1.5-1.7		✓
BH224-2.3-2.5		✓
SDUP201		✓
FCF-201-SURFACE		✓
TB-201		✓
TS-S201		✓

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.

Anna Bui

From: Katrina Taylor <KTaylor@jkenvironments.com.au>
Sent: Thursday, 24 August 2023 3:47 PM
To: Nancy Zhang; Samplereceipt
Subject: RE: Results for Registration 330588 E34300PT2, Warrawong

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Afternoon,

Please schedule the following samples on 3 day TA:

ELS REF: 330588-A
TAT: 3 DAY
DUE: 29/8/23
AB.

Asbestos 500ml (NEPM)
3 BH222 (0-0.1)
15 BH224 (0.3-0.5)

Regards
Katrina Taylor
Associate | Environmental Scientist
NSW Licensed Asbestos Assessor

T: +612 9888 5000
D: 0418 481 628
E: KTaylor@jkenvironments.com.au
www.jkenvironments.com.au

PO Box 976
NORTH RYDE BC NSW 1670
115 Wicks Road
MACQUARIE PARK NSW 2113

JKEnvironments

From: Nancy Zhang <NZhang@envirolab.com.au>
Sent: Wednesday, 23 August 2023 4:15 PM
To: Katrina Taylor <KTaylor@jkenvironments.com.au>
Subject: Results for Registration 330588 E34300PT2, Warrawong

This message originated outside the JKG network. If this looks to be from a staff member, it is likely to be malicious (spam/phish attack). Do not click links of open attachments unless you recognise the sender and know the content is safe.

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC/paperwork received from you
an Excel or .csv file containing the results

Please note that a hard copy will not be posted.

Enquiries should be made directly to:
customerservice@envirolab.com.au

How did we do? Send Feedback

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

CERTIFICATE OF ANALYSIS 39136

Client Details

Client	JK Environments
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E34300PT2**
Number of Samples	1 Soil
Date samples received	17/08/2023
Date completed instructions received	17/08/2023

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	23/08/2023
Date of Issue	23/08/2023

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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		39136-1
Your Reference	UNITS	SDUP201
Date Sampled		15/08/2023
Type of sample		Soil
Date extracted	-	22/08/2023
Date analysed	-	22/08/2023
vTRH C_6 - C_9	mg/kg	<25
vTRH C_6 - C_{10}	mg/kg	<25
TRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total BTEX	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	94

TRH Soil C10-C40 NEPM		
Our Reference		39136-1
Your Reference	UNITS	SDUP201
Date Sampled		15/08/2023
Type of sample		Soil
Date extracted	-	22/08/2023
Date analysed	-	23/08/2023
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	76

PAHs in Soil		
Our Reference		39136-1
Your Reference	UNITS	SDUP201
Date Sampled		15/08/2023
Type of sample		Soil
Date extracted	-	22/08/2023
Date analysed	-	22/08/2023
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d_{14}	%	88

OCP in Soil		
Our Reference		39136-1
Your Reference	UNITS	SDUP201
Date Sampled		15/08/2023
Type of sample		Soil
Date extracted	-	22/08/2023
Date analysed	-	22/08/2023
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	<0.1
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	<0.1
Total +ve reported DDT+DDD+DDE	mg/kg	<0.1
Surrogate 2-chlorophenol-d4	%	74

OP in Soil		
Our Reference		39136-1
Your Reference	UNITS	SDUP201
Date Sampled		15/08/2023
Type of sample		Soil
Date extracted	-	22/08/2023
Date analysed	-	22/08/2023
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	%	74

PCBs in Soil		
Our Reference		39136-1
Your Reference	UNITS	SDUP201
Date Sampled		15/08/2023
Type of sample		Soil
Date extracted	-	22/08/2023
Date analysed	-	22/08/2023
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	%	86

Acid Extractable metals in soil		
Our Reference		39136-1
Your Reference	UNITS	SDUP201
Date Sampled		15/08/2023
Type of sample		Soil
Date digested	-	23/08/2023
Date analysed	-	23/08/2023
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	21
Copper	mg/kg	95
Lead	mg/kg	16
Mercury	mg/kg	<0.1
Nickel	mg/kg	9
Zinc	mg/kg	56

Moisture		
Our Reference		39136-1
Your Reference	UNITS	SDUP201
Date Sampled		15/08/2023
Type of sample		Soil
Date prepared	-	22/08/2023
Date analysed	-	23/08/2023
Moisture	%	22

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	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
Date analysed	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
vTRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	96	[NT]
vTRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	92	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	102	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	98	[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	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
Date analysed	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	111	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	120	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	112	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	111	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	120	[NT]
Surrogate o-Terphenyl	%		Org-020	79	[NT]	[NT]	[NT]	[NT]	71	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
Date analysed	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[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]	90	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[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]	92	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[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]	92	[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]	86	[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	82	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: OCP in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
Date analysed	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	86	[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]	84	[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]	82	[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]	82	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[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]	86	[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]	88	[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]	82	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022/025	78	[NT]	[NT]	[NT]	[NT]	80	[NT]

QUALITY CONTROL: OP in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	39136-1
Date extracted	-			22/08/2023	1	22/08/2023	22/08/2023		22/08/2023	22/08/2023
Date analysed	-			22/08/2023	1	22/08/2023	22/08/2023		22/08/2023	22/08/2023
Azinphos-methyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	86	90
Chlorpyrifos-methyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	88	87
Diazinon	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	98	96
Dichlorovos	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	78	86
Fenitrothion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	68	68
Malathion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Methyl Parathion	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022/025	78	1	74	72	3	80	78

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
Date analysed	-			22/08/2023	[NT]	[NT]	[NT]	[NT]	22/08/2023	[NT]
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]	86	[NT]
Aroclor 1260	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-fluorobiphenyl	%		Org-022/025	92	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date digested	-			23/08/2023	[NT]	[NT]	[NT]	[NT]	23/08/2023	[NT]
Date analysed	-			23/08/2023	[NT]	[NT]	[NT]	[NT]	23/08/2023	[NT]
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	[NT]	[NT]	[NT]	[NT]	101	[NT]
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	[NT]	[NT]	[NT]	[NT]	99	[NT]
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Copper	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Lead	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

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SAMPLE RECEIPT ADVICE

Client Details	
Client	JK Environments
Attention	Katrina Taylor

Sample Login Details	
Your reference	E34300PT2
Envirolab Reference	39136
Date Sample Received	17/08/2023
Date Instructions Received	17/08/2023
Date Results Expected to be Reported	24/08/2023

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12.2
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments
Nil

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 Soil	TRH Soil C10-C40 NEPM	PAHs in Soil	OCP in Soil	OP in Soil	PCBsin Soil	Acid Extractable metalsin soil
SDUP201	✓	✓	✓	✓	✓	✓	✓

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: E34300PT2 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: ktaylor@jkenvironments.com.au

Location: Warrawong — Sample Preserved in Esky on Ice

Sampler: K. Taylor — Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	#6	#6aNEPM	#3aNEPM	#3	pH, CEC and clay content	Asbestos (Detection)	BTEX					
15/08/2023	1	BH221	0-0.1	G, A	0.1	FILL	X											
15/08/2023	2	BH221	0.4-0.55	G, A	0	FILL			X									
15/08/2023	3	BH222	0-0.1	G, A	0.2	FILL	X											
15/08/2023	4	BH222	0.3-0.4	G, A	0.1	FILL												
14/08/2023	5	BH223	0-0.1	G, A	0	FILL				X								
14/08/2023	6	BH223	0.3-0.4	G, A	0	FILL			X									
14/08/2023	7	BH223	0.5-0.65	G, A	0.1	FILL												
14/08/2023	8	BH223	1.0-1.2	G, A	0	FILL				X								
14/08/2023	9	BH223	1.5-1.6	G, A	0	FILL												
~~14/08/2023~~	10	~~BH223~~	~~1.8-2.0~~	~~G, A~~	~~0~~	~~FILL~~												
14/08/2023	11	BH223	2.8-3.0	G, A	0	FILL												
14/08/2023	12	BH223	3.8-4.0	G, A	0	FILL												
14/08/2023	13	BH223	4.2-4.3	G, A	0	NATURAL												
14/08/2023	14	BH224	0-0.1	G, A	0.3	FILL			X									
14/08/2023	5	BH224	0.3-0.5	G, A	0	FILL				X								
14/08/2023	16	BH224	0.75-0.95	G, A	0.1	NATURAL				X								
14/08/2023	17	BH224	1.5-1.7	G, A	0	NATURAL												
14/08/2023	18	BH224	2.3-2.5	G, A	0	NATURAL												
1 15/08/2023	19	SDUP201	-	G	-	FILL												
14/08/2023	20	FCF-201	SURFACE	A	-							X						
14/08/2023	21	TB-201	-	G	-					X								
14/08/2023	22	TS-S201	-	G	-								X					

Envirolab Services
25 Research Drive
Croydon South VIC 3136
Ph: (03) 9763 2500
Job No: 39136
Date Received: 17/8/23
Time Received: 11:30am
Received By: AC
Temp: Cool/Ambient 12.2°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 330588
Date Received: 15/8/23
Time Received: 1700
Received By: EW
Temp: Cool/Ambient 5°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required):		Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag	
Relinquished By: K. Taylor	Date: 15.08.23	Time: 1700	Received By: EW	Date: 15/8

Relinquished by ELS SYD
Stephanie
16/08/23
[signature]

Simon Song

From: Katrina Taylor <KTaylor@jkenvironments.com.au>
Sent: Wednesday, 16 August 2023 1:55 PM
To: Simon Song
Subject: RE: Sample Receipt for 330588 E34300PT2, Warrawong

CAUTION: This email originated from outside of the organisation. Do not act on instructions, click links or open attachments unless you recognise the sender and know the content is authentic and safe.

Hi Simon,

Could we schedule SDUP201 as an inter for Melbourne Envirolab for #6 please.

330588

Regards
Katrina Taylor
Associate | Environmental Scientist
NSW Licensed Asbestos Assessor

T: +612 9888 5000
D: 0418 481 628
E: KTaylor@jkenvironments.com.au
www.jkenvironments.com.au

PO Box 976
NORTH RYDE BC NSW 1670
115 Wicks Road
MACQUARIE PARK NSW 2113

JKEnvironments

From: Simon Song <SSong@envirolab.com.au>
Sent: Wednesday, 16 August 2023 1:33 PM
To: Katrina Taylor <KTaylor@jkenvironments.com.au>
Subject: Sample Receipt for 330588 E34300PT2, Warrawong

This message originated outside the JKG network. If this looks to be from a staff member, it is likely to be malicious (spam/phish attack). Do not click links of open attachments unless you recognise the sender and know the content is safe.

Please refer to attached for:
a copy of the COC/paperwork received from you
a copy of our Sample Receipt Advice (SRA)
Please open and read the SRA as it contains important information.
Please let the lab know immediately if there are any issues.

Results will be available by 6.30pm on the date indicated.

PLEASE NOTE COMBO PRICES WILL ONLY APPLY IF COMBOS ARE SELECTED ON COC.

We have a new reporting format and would welcome your feedback. Sydney@envirolab.com.au

Please note that subcontracted testing or non routine testing may take significantly longer than just the standard 5 day TAT, contact the lab to get an approximate due date.

Enquiries should be made directly to:
customerservice@envirolab.com.au

Regards

Envirolab Services

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 330763

Client Details

Client	JK Environments
Attention	Katrina Taylor
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E34300PT2, Warrawong**
Number of Samples	9 Water
Date samples received	17/08/2023
Date completed instructions received	17/08/2023

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	24/08/2023
Date of Issue	24/08/2023

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Loren Bardwell, Development Chemist
Priya Samarawickrama, Senior Chemist
Tim Toll, Chemist

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in water						
Our Reference		330763-1	330763-2	330763-3	330763-4	330763-5
Your Reference	UNITS	MW4	MW5	MW204	MW223	MW224
Date Sampled		17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
Date analysed	-	21/08/2023	21/08/2023	21/08/2023	21/08/2023	21/08/2023
Dichlorodifluoromethane	µg/L	<10	<10	<10	<100	<10
Chloromethane	µg/L	<10	<10	<10	<100	<10
Vinyl Chloride	µg/L	<10	<10	<10	<100	<10
Bromomethane	µg/L	<10	<10	<10	<100	<10
Chloroethane	µg/L	<10	<10	<10	<100	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<100	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<10	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<10	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<10	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<10	<1
Bromochloromethane	µg/L	<1	<1	<1	<10	<1
Chloroform	µg/L	<1	<1	4	12	22
2,2-dichloropropane	µg/L	<1	<1	<1	<10	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<10	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<10	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<10	<1
Cyclohexane	µg/L	<1	<1	<1	<10	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<10	<1
Benzene	µg/L	<1	<1	<1	<10	<1
Dibromomethane	µg/L	<1	<1	<1	<10	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<10	<1
Trichloroethene	µg/L	<1	<1	<1	<10	<1
Bromodichloromethane	µg/L	<1	<1	<1	<10	4
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<10	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<10	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<10	<1
Toluene	µg/L	<1	<1	<1	<10	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<10	<1
Dibromochloromethane	µg/L	<1	<1	<1	<10	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<10	<1
Tetrachloroethene	µg/L	<1	<1	<1	<10	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<10	<1
Chlorobenzene	µg/L	<1	<1	<1	<10	<1
Ethylbenzene	µg/L	<1	<1	<1	<10	<1

VOCs in water						
Our Reference		330763-1	330763-2	330763-3	330763-4	330763-5
Your Reference	UNITS	MW4	MW5	MW204	MW223	MW224
Date Sampled		17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<10	<1
m+p-xylene	µg/L	<2	<2	<2	<20	<2
Styrene	µg/L	<1	<1	<1	<10	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<10	<1
o-xylene	µg/L	<1	<1	<1	<10	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<10	<1
Isopropylbenzene	µg/L	<1	<1	<1	<10	<1
Bromobenzene	µg/L	<1	<1	<1	<10	<1
n-propyl benzene	µg/L	<1	<1	<1	<10	<1
2-chlorotoluene	µg/L	<1	<1	<1	<10	<1
4-chlorotoluene	µg/L	<1	<1	<1	<10	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<10	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<10	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<10	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<10	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<10	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<10	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<10	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<10	<1
n-butyl benzene	µg/L	<1	<1	<1	<10	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<10	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<10	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<10	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<10	<1
Surrogate Dibromofluoromethane	%	100	99	99	100	100
Surrogate toluene-d8	%	100	100	101	99	100
Surrogate 4-BFB	%	99	99	99	100	99

VOCs in water			
Our Reference		330763-6	330763-7
Your Reference	UNITS	GWDUP201	GWDUP202
Date Sampled		17/08/2023	17/08/2023
Type of sample		Water	Water
Date extracted	-	18/08/2023	18/08/2023
Date analysed	-	21/08/2023	21/08/2023
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	4	<1
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	<1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1

VOCs in water			
Our Reference		330763-6	330763-7
Your Reference	UNITS	GWDUP201	GWDUP202
Date Sampled		17/08/2023	17/08/2023
Type of sample		Water	Water
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	100	101
Surrogate toluene-d8	%	100	100
Surrogate 4-BFB	%	98	99

vTRH(C6-C10)/BTEXN in Water						
Our Reference		330763-1	330763-2	330763-3	330763-4	330763-5
Your Reference	UNITS	MW4	MW5	MW204	MW223	MW224
Date Sampled		17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
Date analysed	-	21/08/2023	21/08/2023	21/08/2023	21/08/2023	21/08/2023
TRH C_6 - C_9	μg/L	<10	<10	<10	<100	45
TRH C_6 - C_{10}	μg/L	<10	<10	<10	<100	51
TRH C_6 - C_{10} less BTEX (F1)	μg/L	<10	<10	<10	<100	51
Benzene	μg/L	<1	<1	<1	<10	<1
Toluene	μg/L	<1	<1	<1	<10	<1
Ethylbenzene	μg/L	<1	<1	<1	<10	<1
m+p-xylene	μg/L	<2	<2	<2	<20	<2
o-xylene	μg/L	<1	<1	<1	<10	<1
Naphthalene	μg/L	<1	<1	<1	<10	<1
Surrogate Dibromofluoromethane	%	100	99	99	100	100
Surrogate toluene-d8	%	100	100	101	99	100
Surrogate 4-BFB	%	99	99	99	100	99

vTRH(C6-C10)/BTEXN in Water					
Our Reference		330763-6	330763-7	330763-8	330763-9
Your Reference	UNITS	GWDUP201	GWDUP202	TS-W201	TB-W201
Date Sampled		17/08/2023	17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water	Water
Date extracted	-	18/08/2023	18/08/2023	18/08/2023	18/08/2023
Date analysed	-	21/08/2023	21/08/2023	21/08/2023	21/08/2023
TRH C_6 - C_9	μg/L	<10	<10	[NA]	<10
TRH C_6 - C_{10}	μg/L	<10	<10	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	μg/L	<10	<10	[NA]	<10
Benzene	μg/L	<1	<1	104%	<1
Toluene	μg/L	<1	<1	103%	<1
Ethylbenzene	μg/L	<1	<1	102%	<1
m+p-xylene	μg/L	<2	<2	98%	<2
o-xylene	μg/L	<1	<1	102%	<1
Naphthalene	μg/L	<1	<1	[NA]	<1
Surrogate Dibromofluoromethane	%	100	101	101	99
Surrogate toluene-d8	%	100	100	100	100
Surrogate 4-BFB	%	98	99	100	98

svTRH (C10-C40) in Water						
Our Reference		330763-1	330763-2	330763-3	330763-4	330763-5
Your Reference	UNITS	MW4	MW5	MW204	MW223	MW224
Date Sampled		17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
Date analysed	-	19/08/2023	19/08/2023	19/08/2023	19/08/2023	19/08/2023
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	%	87	89	87	71	90

svTRH (C10-C40) in Water				
Our Reference		330763-6	330763-7	330763-9
Your Reference	UNITS	GWDUP201	GWDUP202	TB-W201
Date Sampled		17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water
Date extracted	-	18/08/2023	18/08/2023	18/08/2023
Date analysed	-	19/08/2023	19/08/2023	19/08/2023
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	%	90	83	81

PAHs in Water						
Our Reference		330763-1	330763-2	330763-3	330763-4	330763-5
Your Reference	UNITS	MW4	MW5	MW204	MW223	MW224
Date Sampled		17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
Date analysed	-	18/08/2023	18/08/2023	18/08/2023	18/08/2023	18/08/2023
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	0.20	<0.1
Surrogate p-Terphenyl-d14	%	106	106	110	99	105

PAHs in Water				
Our Reference		330763-6	330763-7	330763-9
Your Reference	UNITS	GWDUP201	GWDUP202	TB-W201
Date Sampled		17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water
Date extracted	-	18/08/2023	18/08/2023	18/08/2023
Date analysed	-	18/08/2023	18/08/2023	18/08/2023
Naphthalene	µg/L	<0.2	<0.2	<0.2
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	%	108	103	100

HM in water - dissolved						
Our Reference	UNITS	330763-1	330763-2	330763-3	330763-4	330763-5
Your Reference		MW4	MW5	MW204	MW223	MW224
Date Sampled		17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/08/2023	21/08/2023	21/08/2023	21/08/2023	21/08/2023
Date analysed	-	21/08/2023	21/08/2023	21/08/2023	21/08/2023	21/08/2023
Arsenic-Dissolved	µg/L	<1	<1	<1	1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	9	1	7	10	3
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1	<1	<1	1
Zinc-Dissolved	µg/L	4	3	8	7	9

HM in water - dissolved				
Our Reference	UNITS	330763-6	330763-7	330763-9
Your Reference		GWDUP201	GWDUP202	TB-W201
Date Sampled		17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water
Date prepared	-	21/08/2023	21/08/2023	21/08/2023
Date analysed	-	21/08/2023	21/08/2023	21/08/2023
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	6	7	<1
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	<1	<1
Zinc-Dissolved	µg/L	8	5	<1

Miscellaneous Inorganics						
Our Reference		330763-1	330763-2	330763-3	330763-4	330763-5
Your Reference	UNITS	MW4	MW5	MW204	MW223	MW224
Date Sampled		17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
Date analysed	-	17/08/2023	17/08/2023	17/08/2023	17/08/2023	17/08/2023
pH	pH Units	6.7	7.1	7.6	8.5	7.8
Electrical Conductivity	µS/cm	300	720	560	600	1,200

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.
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: VOCs in water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/08/2023	1	18/08/2023	21/08/2023		18/08/2023	[NT]
Date analysed	-			21/08/2023	1	21/08/2023	22/08/2023		21/08/2023	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	115	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	<1	<1	0	112	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	111	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	114	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	113	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	111	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	108	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	108	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	1	100	100	0	102	[NT]
Surrogate toluene-d8	%		Org-023	100	1	100	95	5	101	[NT]
Surrogate 4-BFB	%		Org-023	98	1	99	105	6	101	[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	-			18/08/2023	1	18/08/2023	21/08/2023		18/08/2023	[NT]
Date analysed	-			21/08/2023	1	21/08/2023	22/08/2023		21/08/2023	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	109	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	109	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	113	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	110	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	108	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	106	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	108	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	100	1	100	100	0	102	[NT]
Surrogate toluene-d8	%		Org-023	100	1	100	95	5	101	[NT]
Surrogate 4-BFB	%		Org-023	98	1	99	105	6	101	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	330763-2
Date extracted	-			18/08/2023	1	18/08/2023	18/08/2023		18/08/2023	18/08/2023
Date analysed	-			19/08/2023	1	19/08/2023	19/08/2023		19/08/2023	19/08/2023
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	104	106
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	111	113
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	100	127
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	104	106
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	111	113
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	100	127
Surrogate o-Terphenyl	%		Org-020	103	1	87	90	3	103	98

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			18/08/2023	1	18/08/2023	18/08/2023		18/08/2023	[NT]
Date analysed	-			18/08/2023	1	18/08/2023	18/08/2023		18/08/2023	[NT]
Naphthalene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	99	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	106	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	103	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	100	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	96	1	106	109	3	85	[NT]

QUALITY CONTROL: HM in water - dissolved					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W5	330763-2
Date prepared	-			21/08/2023	1	21/08/2023	21/08/2023		21/08/2023	21/08/2023
Date analysed	-			21/08/2023	1	21/08/2023	21/08/2023		21/08/2023	21/08/2023
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	97
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	99	103
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	100	102
Copper-Dissolved	µg/L	1	Metals-022	<1	1	9	8	12	97	96
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	88
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	92	90
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	98	99
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	4	4	0	101	103

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			17/08/2023	[NT]	[NT]	[NT]	[NT]	17/08/2023	[NT]
Date analysed	-			17/08/2023	[NT]	[NT]	[NT]	[NT]	17/08/2023	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

VOCs in water - The PQL for 330763-4 has been raised due to the sample matrix having sediment thereby requiring a dilution.

vTRH & BTEXN in Water NEPM - The PQL for 330763-4 has been raised due to the sample matrix having sediment thereby requiring a dilution.

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	Katrina Taylor

Sample Login Details	
Your reference	E34300PT2, Warrawong
Envirolab Reference	330763
Date Sample Received	17/08/2023
Date Instructions Received	17/08/2023
Date Results Expected to be Reported	24/08/2023

Sample Condition	
Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	9 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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

Sample ID	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	HM in water - dissolved	pH	Electrical Conductivity
MW4	✓	✓	✓	✓	✓	✓	✓
MW5	✓	✓	✓	✓	✓	✓	✓
MW204	✓	✓	✓	✓	✓	✓	✓
MW223	✓	✓	✓	✓	✓	✓	✓
MW224	✓	✓	✓	✓	✓	✓	✓
GWDUP201	✓	✓	✓	✓	✓		
GWDUP202	✓	✓	✓	✓	✓		
TS-W201		✓					
TB-W201		✓	✓	✓	✓		

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: E34300PT2 Date Results Required: STANDARD Page: 1 of 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: ktaylor@jkenvironments.com.au

Location: Warrawong
Sampler: K. Taylor

Sample Preserved in Esky on Ice

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 3L	VOCs	pH / EC	TRH/BTEX								
17/8	1	MW4	G1, V, H, PVC		Water	X	X	X									
17/08/2023	2	MW5	G1, V, H, PVC		Water	X	X	X									
17/08/2023	3	MW203	G1, V, H, PVC		Water	X	X	X									
17/08/2023	4	MW223	G1, V, H, PVC		Water	X	X	X									
17/08/2023	5	MW224	G1, V, H, PVC		Water	X	X	X									
17/08/2023	6	GWDUP201	G1, V, H, PVC	-	Water	X	X										
17/08/2023	7	GWDUP202	G1, V, H, PVC	-	Water	X	X										
17/08/2023	8	TS-W201	V	-	Water				X								
17/08/2023	9	TB-W201	V	-	Water	X											

ENVIROLAB
Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 330763
Date Received: 17/08/23
Time Received: 1440
Received By: Grace
Temp: Cool/Ambient
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: K. Taylor	Date: 17.08.23	Time: 1440	Received By: Grace	Date: 17/08

Air Monitoring Laboratory Documents

Air Monitoring Certificate

Clearsafe Environmental Solutions Pty Ltd
9 Industrial Road, Unanderra NSW 2526
info@clearsafe.com.au
1300 042 962

Report Number: 20-15055-01-AM
Monitoring Date: 31/7/2023
Received Date: 31/7/2023
Analysis Date: 31/7/2023
Report Date: 31/7/2023
Site Address: 85-91 Cowper Street
Warrawong NSW 2505
Client Name: Jeffery & Katauskas Services Pty Ltd ATF The Trustee for Jeffery Katauskas Walker Unit Trust
Client Address: PO Box 976
North Ryde BC NSW 1670

Client Contact: Katrina Taylor
Sampled By: Kristian Zajec-Tingle
Approved Counter: Luke Heckenberg
Approved Signatory: Luke Heckenberg

Test Method: Airborne fibre monitoring in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)] and Clearsafe method SOP.AM.01.

Notes: The results contained within this report relate only to the samples tested. This report should not be copied, presented or reviewed except in full.

Fibre count by Joel Spittles checked by Luke Heckenberg.

Sample Number	Location	Code*	Time On	Time Off	Airflow On	Airflow Off	Fibres	Fields	Conc.**
20-15055/1	Attached to drill rig	5	09:00	15:15	2.11	2.11	1	100	<0.01
20-15055/2	Health care interpreter service, south-eastern side, attached to tree	5	09:04	15:19	2.11	2.11	0	100	<0.01
20-15055/3	Health care interpreter service, north-eastern car park, attached to railing	5	09:08	15:17	2.11	2.11	0	100	<0.01
20-15055/4	Hillview childcare centre, north-western side, attached to fencing	5	09:12	15:21	2.11	2.11	0	100	<0.01
20-15055/5	Main hospital building, north-eastern car park, attached to the railing	5	09:16	15:24	2.11	2.11	0	100	<0.01
20-15055/6	Field Blank	6					0	100	N/A

**** Concentration in Fibres/mL of air**

*** Sample Codes:**

1 - Asbestos removal
2 - Bag-out
3 - Enclosure dismantling
4 - Clearance
5 - Background
6 - Blank Sample
7 - Fibre Count Only
8 - Personal monitoring

NATA Accredited Laboratory No. 18542

Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian / national standards.

WORLD RECOGNISED ACCREDITATION

Air Monitoring Certificate

Clearsafe Environmental Solutions Pty Ltd
9 Industrial Road, Unanderra NSW 2526
info@clearsafe.com.au
1300 042 962

Report Number:	20-15055-02-AM
Monitoring Date:	1/8/2023
Received Date:	1/8/2023
Analysis Date:	1/8/2023
Report Date:	1/8/2023
Site Address:	85-91 Cowper Street Warrawong NSW 2505
Client Name:	Jeffery & Katauskas Services Pty Ltd ATF The Trustee for Jeffery Katauskas Walker Unit Trust
Client Address:	PO Box 976 North Ryde BC NSW 1670

Client Contact:	Katrina Taylor
Sampled By:	Toby Williams
Approved Counter:	Nathan Crouch
Approved Signatory:	Luke Heckenberg

Test Method: Airborne fibre monitoring in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)] and Clearsafe method SOP.AM.01.

Notes: The results contained within this report relate only to the samples tested. This report should not be copied, presented or reviewed except in full.

Sample Number	Location	Code*	Time On	Time Off	Airflow On	Airflow Off	Fibres	Fields	Conc.**
20-15055/7	Child care carpark, eastern boundary, on fence	1	07:43	13:56	2.02	2.02	0	100	<0.01
20-15055/8	Fairfax Road vehicle entry, South Eastern boundary, in tree	1	07:47	13:58	2.02	2.02	0	100	<0.01
20-15055/9	Child care outdoor play area, Western side of site, on fence	1	07:53	14:00	2.02	2.02	1	100	<0.01
20-15055/10	Main entry driveway, Northern boundary of site, in tree	1	08:00	14:03	2.02	2.02	0	100	<0.01
20-15055/11	Drill rig	1	08:01	13:53	2.02	2.02	0	100	<0.01
20-15055/12	Field blank	6					0	100	N/A

**** Concentration in Fibres/mL of air**

*** Sample Codes:**

1 - Asbestos removal	5 - Background
2 - Bag-out	6 - Blank Sample
3 - Enclosure dismantling	7 - Fibre Count Only
4 - Clearance	8 - Personal monitoring

NATA Accredited Laboratory No. 18542

Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian / national standards.

Air Monitoring Certificate

Clearsafe Environmental Solutions Pty Ltd
9 Industrial Road, Unanderra NSW 2526
info@clearsafe.com.au
1300 042 962

Report Number: 20-15055-03-AM
Monitoring Date: 2/8/2023
Received Date: 2/8/2023
Analysis Date: 2/8/2023
Report Date: 2/8/2023
Site Address: 85-91 Cowper Street
Warrawong NSW 2505
Client Name: Jeffery & Katauskas Services Pty Ltd ATF The Trustee for Jeffery Katauskas Walker Unit Trust
Client Address: PO Box 976
North Ryde BC NSW 1670

Client Contact: Katrina Taylor
Sampled By: Kristian Zajec-Tingle
Approved Counter: Nathan Crouch
Approved Signatory: Luke Heckenberg

Test Method: Airborne fibre monitoring in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres [NOHSC:3003(2005)] and Clearsafe method SOP.AM.01.

Notes: The results contained within this report relate only to the samples tested. This report should not be copied, presented or reviewed except in full.

Sample 15: Air monitor pump moved from designated location.

Sample 16: Air monitor pump moved from designated location.

Sample Number	Location	Code*	Time On	Time Off	Airflow On	Airflow Off	Fibres	Fields	Conc.**
20-15055/13	Health care interpreter service, northeastern car park, attached to railing	5	09:05	12:15	3.14	3.14	0	100	<0.01
20-15055/14	Health care interpreter service, southeastern side, attached to tree	5	09:07	12:11	3.14	3.14	0	100	<0.01
20-15055/15	Attached to open excavator cabin	5	09:10	12:12	3.14	3.14	0	100	Reject
20-15055/16	Hillview childcare centre, south-western side, attached to metal pole	5	09:13	12:13	3.14	3.14	0	100	Reject
20-15055/17	Community mental health rehabilitation service, north-eastern side, attached to tree	5	09:16	12:09	3.14	3.14	1	100	<0.01
20-15055/18	Field Blank	6					0	100	N/A

**** Concentration in Fibres/mL of air**

*** Sample Codes:**

1 - Asbestos removal	5 - Background
2 - Bag-out	6 - Blank Sample
3 - Enclosure dismantling	7 - Fibre Count Only
4 - Clearance	8 - Personal monitoring

NATA Accredited Laboratory No. 18542

Accredited for compliance with ISO/IEC 17025 - Testing. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian / national standards.

Appendix E: 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)[16] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[17]. 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;

[16] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)
[17] 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 F: 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 as an appendix to 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 and 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)	6	Approximately 11% of primary samples
Inter-laboratory duplicate (soil)	1	Approximately 2% of samples
Intra-laboratory duplicate (groundwater)	2	Approximately 40% of samples
Trip spike - Soil Water	 2 1	One of each matrix for the investigation to demonstrate adequacy of preservation, storage and transport methods
Trip blank - Soil Water	 1 1	One of each matrix for the investigation to demonstrate adequacy of preservation, storage and transport methods
Rinsate - Hand auger	 1	One for the hand auger for the investigation to demonstrate adequacy of decontamination methods

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 within specified holding times 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 soil samples was reported to be up to 14°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. On this basis, JKE is of the opinion that the temperatures reported on the Sample Receipts are unlikely to be reliable or representative of the overall batch. Notwithstanding, the trip spike results for the project were all within the acceptable range which indicates that volatile recovery was good and field preservation/transport methods did not adversely impact precision.

It is noted that a typographical error was made on the CoC document and MW204 was listed as MW203. This is not considered to have an impact on the data quality as the sample containers included the correct monitoring well reference and the correct well reference was documented in the laboratory report.

It is noted that the trip spike soil for the initial soil sampling was broken upon placement in the esky and prior to transportation to the laboratory, reference should be made to the note on the CoC for laboratory report 329661. Therefore, a new trip spike soil was transported with the soil samples for the second mobilisation as part of the DSI for assessment of field preservation methods.

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 groundwater anthracene PQL which was 10 times greater than the ecological SAC and the vinyl chloride PQL which was 3.3 times greater than the adopted recreational SAC and 33.3 times greater than the health-based

SAC. In light of the PAH and VOC 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.

In addition to the above, due to sediment in the MW223 sample, the sample was diluted and this consequently resulted in some of the PQLs being raised for VOCs and BTEX. This is not considered to have adversely affected the dataset as VOCs (other than BTEX) were not CoPC and were only analysed for a precautionary assessment, and all BTEX PQLs except for benzene still remained below the PQLs.

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 mercury in S DUP 2/BH201 (0-0.2m);
- Elevated RPDs were reported for chromium, copper, lead and mercury in S DUP 3/BH202 (0-0.1m);
- Elevated RPDs were reported for lead and mercury in S DUP 5/BH219 (0-0.1m);
- Elevated RPDs were reported for arsenic in S DUP 6/BH1 (0-0.1m); and
- Elevated RPDs were reported for lead, mercury and zinc in SDUP201/BH222 (0-0.2m).

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 less than the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

Field/Trip Blanks

During the investigation, two soil trip blanks and one water trip blank were placed in the esky during sampling and transported back to the laboratory.

The soil trip blank analysis results were all less than the PQLs with the exception of chromium, copper, lead and zinc with reported concentrations of between 2mg/kg and 11mg/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 results for the water field blank were all less than the PQLs, therefore cross contamination between samples that may have significance for data validity did not occur.

Rinsates

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 (the Australian drinking water guideline for total trihalomethanes is 250µg/L).

Trip Spikes

The soil trip spike results ranged from 96% to 97% and indicated that field preservation methods were appropriate.

The water trip spike results ranged from 98% to 104% and 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. There were no laboratory QA non-conformances for duplicates, spikes, blanks or LCS.

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 DSI. However, this supplemented an initial monitoring event from a reduced number of locations for the PSI 2022. Due to the limited number of sampling events, there is some uncertainty around the representativeness of the groundwater data, particularly during different climatic conditions and after wet/dry periods. Notwithstanding, given the low contaminant concentrations reported, the reduction in hydrocarbon concentrations in some wells between the initial (PSI 2022) and subsequent (DSI) sampling events, and the relative consistency in some of the heavy metals concentrations which suggested they were consistent with background conditions, the groundwater data is considered to be acceptable to inform the Tier 1 risk assessment.

Appendix G: Field Work Documents

JKE SAQP

REPORT TO

NSW HEALTH INFRASTRUCTURE

ON

SAMPLING, ANALYSIS AND QUALITY PLAN (SAQP)

FOR

DETAILED SITE INVESTIGATION (DSI)

AT

85-91 COWPER STREET, WARRAWONG, NSW

Date: 26 July 2023

Ref: E34300PT2-SAQP

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DOCUMENT REVISION RECORD

Report Reference	Report Status	Report Date
E34300PT2-SAQP	Final Report	26 July 2023

This Report (which includes all attachments and annexures) has been prepared by JKE for the Client, and is intended for the use only by that Client.

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: JKE SAQP Figures
Appendix B: Report Explanatory Notes
Appendix C: Guidelines and Reference Documents

Abbreviations

Asbestos Fines/Fibrous Asbestos	**AF/FA**
Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
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**
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**
Detailed Site Investigation	**DSI**
Ecological Investigation Level	**EIL**
Ecological Screening Level	**ESL**
Environment Protection Authority	**EPA**
Ecological Screening Level	**ESL**
Health Investigation Level	**HILs**
Health Screening Level	**HSLs**
JK Environments	**JKE**
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**
Polychlorinated Biphenyls	**PCBs**
Photo-ionisation Detector	**PID**
Protection of the Environment Operations	**POEO**
Practical Quantitation Limit	**PQL**
Remediation Action Plan	**RAP**
Sampling, Analysis and Quality Plan	**SAQP**
State Environmental Planning Policy	**SEPP**
Site Specific Assessment	**SSA**
Source, Pathway, Receptor	**SPR**
Standard Sampling Procedure	**SSP**
Standing Water Level	**SWL**
Total Recoverable Hydrocarbons	**TRH**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
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**

1 INTRODUCTION

NSW Health Infrastructure ('the client') commissioned JK Environments (JKE) to prepare a Sampling, Analysis and Quality Plan (SAQP) for the Detailed Site Investigation (DSI) to be undertaken for the proposed New Warrawong Community Health Centre at 85-91 Cowper Street, Warrawong, NSW ('the site'). The site location is shown on Figure 1 and the SAQP applies to the site area as shown on Figure 2.2 attached in the appendices.

This report has been prepared to support the lodgement of a Development Application (DA) for the proposed Warrawong Community Health Centre development, with regards to Chapter 4 of State Environmental Planning Policy (Resilience and Hazards) 2021[1] (formerly known as SEPP55).

JKE has previously undertaken several phases of investigation at the site and within the wider hospital property. A summary of relevant information from these investigations is included in Section 2.

1.1 Proposed Development Details

The proposed development is in the early planning stages and is likely to include construction of a two storey building and associated carpark, pathways and landscaping in the north-east corner of the wider hospital property. Based on the limited information provided, we understand that the proposed development would likely be constructed on grade, with minimal excavations for services trenches and the building foundations.

1.2 Aim and Objectives

The aim of the DSI is to characterise the soil and groundwater contamination conditions in accessible areas of the site in order to assess site risks in relation to contamination and establish whether remediation is required.

The DSI objectives are to:

- Assess the soil and groundwater contamination conditions in accessible areas;
- Assess the potential risks posed by contamination to the receptors identified in the Conceptual Site Model (CSM); and
- Inform the preparation of a Remediation Action Plan (RAP).

1.3 Scope of Work

The SAQP was prepared generally in accordance with a JKE proposal (Ref: EP58856PTrev1) of 28 June 2023 and written acceptance from Savills acting on behalf of the client of 3 July 2023.

The scope of work included review of the previous reports and preparation of an SAQP with regards to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)[2]

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

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

and other guidelines made under or with regards to the Contaminated Land Management Act (1997)[3]. A list of reference documents/guidelines is included in the appendices.

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

2 SITE INFORMATION

2.1 Preliminary Site Investigation (PSI 2022)

JKE previously undertook a PSI across the site and southern portion of the wider section of the hospital property in 2022[4]. The PSI 2022 included a review of site history information, a site inspection, soil sampling from 37 boreholes and groundwater sampling from three monitoring wells. Of these locations, 19 boreholes and two monitoring wells were located within the site. The following areas of environmental concern (AEC) were identified and are applicable to the site: fill material; use of pesticides; hazardous building materials in former and existing buildings; and fuel storage just south of the site boundary, including two underground storge tanks (USTs) and one above ground storage tank (AST) (see Figure 2).

The boreholes on the site encountered fill materials (i.e. historically imported/placed soils) to depths of approximately 0.3m below ground level (BGL) to 2.6mBGL, underlain by clayey residual soils and/or latite bedrock. The fill contained inclusions of igneous, ironstone, sandstone and siltstone gravel, shale fragments, slag, concrete, brick and metal fragments, coal, ash, and root fibres. There were no fibre cement fragments (FCF)/ asbestos containing materials (ACM) identified in any of the bulk asbestos quantification field screening samples.

Asbestos as ACM was detected in one soil sample on the site at a concentration above the health screening level (HSL) site assessment criteria (SAC). Total recoverable hydrocarbons (TRH) were encountered in groundwater from both monitoring wells on the site at concentrations greater than the site specific assessment criterion. The TRH detections were considered likely to be associated with a medium heavy fuel source such as diesel or kerosene. Copper and zinc were reported above the ecological SAC in groundwater. Figure 3 from the PSI 2022 is included in the appendices.

The PSI 2022 recommended an asbestos management plan (AMP) be prepared and implemented for the current land use/operations, in addition to further investigation via a DSI.

2.2 Preliminary Site Investigation (PSI 2023)

JKE previously undertook a PSI across the western portion of the wider section of the hospital property in 2023[5]. The PSI included a review of site history information, a site inspection, soil sampling from 15 boreholes and two monitoring wells across the western portion of the wider hospital property. The following AEC were identified: fill material; use of pesticides; hazardous building materials in former and existing buildings; and fuel storage in a down-gradient section of the wider hospital property.

None of the PSI 2023 boreholes were positioned on the site. The boreholes encountered fill materials to depths of approximately 0.2mBGL to 4.5mBGL, underlain by clayey residual soils and/or latite bedrock. The fill contained inclusions of igneous, ironstone, sandstone and siltstone gravel, shale fragments, slag, concrete, brick and metal fragments, coal, ash, and root fibres. There was no FCF/ACM identified in any of the bulk asbestos quantification field screening samples.

[4] JKE, (2022). *Report to Health Infrastructure on Preliminary Site Investigation for Proposed New Warrawong Community Health Centre Development at 85-91 Cowper Street, Warrawong, NSW.* (Ref: E34300PT2rpt DRAFT, dated 10 November 2022) (referred to as PSI 2022)

[5] JKE, (2023). *Report to Health Infrastructure on Preliminary Site Investigation for Proposed New Warrawong Community Health Centre Development at 85-91 Cowper Street, Warrawong, NSW.* (Ref: E34300PT2rpt2 DRAFT, dated 20 March 2023) (referred to as PSI 2023)

Asbestos (as AF/FA) was detected in surface fill/soil at one location, and in deeper fill at two other locations. All asbestos concentrations were below the SAC. Copper and zinc were reported above the ecological SAC in fill/soil, and in groundwater, copper and zinc were reported above the ecological SAC.

As a duty of care, and to meet the requirements under Clause 429 of the Work Health and Safety Regulation (2017), an AMP (for asbestos in/on soil) was recommended to be prepared and implemented for the current land use/operations at the hospital property, in addition to further investigation via a DSI.

2.3 Site Identification

Table 2-1: Site Identification

Current Site Owner (certificate of title):	Health Administration Board
Site Address:	85-91 Cowper Street, Warrawong, NSW
Lot & Deposited Plan:	Lots 21 to 26 & Lots 50 to 53 in DP23670 and part of Lots 39 to 41 and 49 in DP23670
Current Land Use:	Hospital
Proposed Land Use:	Continued use as a hospital/community health centre
Local Government Authority:	Wollongong City Council
Current Zoning:	R2: Low density residential
Site Area (m^2) (approx.):	8,950
RL (AHD in m) (approx.):	21-30
Geographical Location (decimal degrees) (approx.):	Latitude: -34.4863511 Longitude: 150.8790082

2.4 Site Description

The site is located in the eastern half of the existing Port Kembla Hospital, in a predominantly residential area of Warrawong and is bound by Cowper Street to the north and Fairfax Road to the east. The site is located approximately 400m to the north-west of Kully Bay (on Lake Illawarra).

The regional topography is characterised by a south-east facing hillside that falls towards Kully Bay. The site is located mid slope, locally sloping to the south-east at approximately 10° to 15°. Parts of the site appear to have been levelled to account for the slope and accommodate the existing development.

The most recent site walkover was undertaken by JKE as part of the most recent fieldwork undertaken for the PSI 2022 on 26 September 2022. Key observations are summarised below:

- The site and wider hospital property was occupied by Port Kembla District Hospital and included buildings, car parks and internal access roads and footpaths as well as landscaped/garden areas;

- On site there were three interconnected buildings of one to three storeys. A childcare centre was located on the western side ground floor of the main site building and included a fenced off play area. The buildings were of an age indicative of housing hazardous building materials (i.e. asbestos and lead containing paint);
- On the north-east side of the main building was an asphaltic concrete car park and access driveway which led to Cowper Street in the centre of the northern boundary;
- The site was entirely unfenced. Surface scouring observed at the site indicated minimal erosion and appeared to be due to surface water and wash away of surface soils at the interface between paved and unpaved sections of the site;
- On the wider hospital property just south of the site boundary, a 1,000L AST containing diesel was observed (refer to Figure 2). No odours or staining on the surrounding ground surface were noted in the vicinity of the AST during the inspection;
- On the wider hospital property south of the site boundary and just to the west of the AST, the area where the abandoned USTs were inferred to be located was observed to comprise a section of asphaltic paved car park and no odours or staining on the surrounding ground surface were noted in this area during the inspection;
- Fill material (igneous gravels, concrete fragments, etc.) were observed at the site surface in areas of scouring indicating that some filling had likely occurred at the site for levelling purposes. In the east of the site, a narrow grass covered soil bund (approximately 0.5m in height) extended in a north-south direction;
- Surface water flows would be expected to flow to the south-east in keeping with the localised fall of the site. Excess surface water would either be expected to infiltrate the unpaved areas or into the stormwater pits observed across the site. These pits would be expected to discharge into the local stormwater system; and
- Outside of building footprints or paved areas the site was generally grass covered, with a number of medium to large trees in the south and north-east section of the site. No obvious signs of vegetation stress or dieback were observed.

2.5 Surrounding Land Use

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

- North – Residential properties beyond Cowper Street;
- South – The wider hospital property and residential properties beyond Fairfax Road;
- East – Residential properties beyond Fairfax Road;
- West – The wider hospital property, including USTs and AST to the south-west.

JKE is of the opinion that the USTs and AST located on the wider hospital property to the west to south-west of the site may be a potential off-site contamination source due to the proximity of the tanks. We also note that TRH was detected in the onsite groundwater samples collected for the PSI.

2.6 Underground Services

The 'Before You Dig Australia' (BYDA) plans were reviewed for the investigation in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration. Major services were not identified that would be expected to act as preferential pathways for contamination migration.

2.7 Summary of Site History Information

A time line summary of the historical land uses and activities is presented in the table below. 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 Desktop.

Table 2-2: Summary of Historical Land Uses/Activities

Year(s)	Potential Land Use/Activities
1926-1961	On-site: • Vacant land. Surrounding Area: • Predominantly vacant initially; and • Ongoing development for residential use
1961-onwards	On-site: • Ongoing development of site for hospital including construction of buildings, pathways and vehicle access (driveways and car parks); • Some filling of the site may have occurred for levelling purposes and around services; • Use of pesticides beneath buildings and around site; and • Hazardous building materials (i.e. asbestos and lead in paint) may have been used in existing structures. Surrounding Area: • Ongoing development of surrounding area for residential and hospital property; • Hazardous building materials (i.e. asbestos and lead in paint) may have been used in former and existing structures. A building was demolished to the south of the site (existing car park location) between 2012 and 2016; • Installation of USTs on wider hospital property. Use of AST for diesel storage; and • Installation/abandonment of petrol USTs and infrastructure. The tanks were reportedly abandoned circa 2003.

2.8 Summary of Geology and Hydrogeology

2.8.1 Regional Geology and Soil Landscapes

Regional geological information reviewed for the previous investigations indicated that the site is underlain by Dapto Latite Member, which typically consists of Mafic basaltic-textured latite, aphanitic to porphyritic with crystalline groundmass, vesicles mostly as elongated stringers parallel to flow, sporadically infilled with carbonate, and sporadic columnar jointing.

A summary of the subsurface conditions encountered during the PSI 2022 (which includes some boreholes located to the south of the site) is presented in the following table:

Table 2-3: Summary of Subsurface Conditions

Profile	Description
Fill	Fill was encountered at the surface or directly beneath the pavement in all boreholes and extended to depths of approximately 0.2mBGL to 2.6mBGL. Boreholes BH1, BH2, BH3, BH12, BH13, BH14, BH31, and BH33, were terminated in the fill at a maximum depth of approximately 1.6mBGL. The borehole logs recorded this as being 'refusal on obstruction in fill', however, it is possible that the refusal occurred at the base of the fill, on-top of the underlying bedrock. The fill typically comprised silty clay, sandy gravel, silty sandy clay and gravel with inclusions of igneous, ironstone, sandstone and latite gravel, sand, concrete, asphaltic concrete, terracotta, brick, plastic and metal fragments, geofabric, slag, ash, roots and root fibres. No odours or staining were recorded in the fill material during field work. FCF was encountered on the surface at BH26. No FCF/ACM was encountered in the fill material during fieldwork.
Natural Soil	Natural silty sandy clay and silty clay residual soils were encountered beneath the fill material in boreholes BH15 to BH19, and extended to depths of approximately 0.4mBGL to 2.4mBGL. Neither odours nor staining were recorded in the natural soil during fieldwork.
Bedrock	Latite bedrock was encountered beneath the fill material or natural soils in boreholes BH4, BH5 and BH11 at depths of approximately 0.4mBGL to 2.6mBGL Neither odours nor staining were recorded in the bedrock during fieldwork.
Groundwater	All boreholes remained dry during and on completion of drilling.

2.8.2 Acid Sulfate Soil (ASS) Risk and Planning

The site is not located in an ASS risk area according to the risk maps prepared by the Department of Land and Water Conservation.

ASS information presented in the Lotsearch report indicated that the site is located within a Class 5 ASS risk area. Works in a Class 5 risk area that could pose an environmental risk in terms of ASS include works within 500m of adjacent Class 1,2,3,4 land which are likely to lower the water table below 1m AHD on the adjacent Class 1,2,3,4 land.

JKE note that the site is located at an elevation of approximately 21-30m AHD and residual soils were observed during the fieldwork conducted for the PSI 2022. ASS is not usually associated with soil horizons above 5mAHD or residual soil profiles. Based on the available information, it is unlikely that ASS would be disturbed as part of the proposed development, or that the proposed development will likely lower the water table below 1mAHD on adjacent Class 1, 2, 3, or 4 land.

2.8.3 Hydrogeology

Hydrogeological information presented in the PSI 2022 indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes fractured or fissured, extensive aquifers of low to moderate productivity. There was a total of 74 registered bores within the search buffer of 1,000m. In summary:

- The nearest registered bore was located approximately 1,105m to the north-east of the site. This was utilised for monitoring purposes;
- The majority of the bores were registered for monitoring purposes;
- There were no nearby bores (i.e. within 1km) registered for domestic, water supply or irrigation uses; and
- The drillers log information from the closest registered bores typically identified fill and/or clay soil to depths of 12m-14m, underlain by sandstone and shale bedrock. Standing water levels (SWLs) in the bores ranged from 1.2mBGL to 12mBGL.

Table 2-4: Summary of Field Screening

Aspect	Details
Groundwater Depth & Flow	SWLs measured in the monitoring wells installed at the site ranged from 1.17mBGL to 7mBGL. Groundwater RLs calculated on these measurements ranged from 25.41mAHD to 27.32mAHD. Groundwater flow was inferred to be towards the south-east.
Groundwater Field Parameters	Field measurements recorded during sampling were as follows: - pH ranged from 7.06 to 7.86; - EC ranged from 568µS/cm to 846µS/cm; - Eh ranged from 22.4mV to 24.1mV; and - DO was 0.7mg/L in both wells.
LNAPLs petroleum hydrocarbons	Phase separated product (i.e. LNAPL) were not detected using the interphase probe during groundwater sampling.

2.8.4 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Kully Bay (on Lake Illawarra) located approximately 400m to the south-east of the site. The bay is considered to support a marine ecosystem and is down-gradient from the site.

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. An iteration of the CSM for the site is presented in the following table and is based on the site information (including the site inspection information), the review of site history information and previous investigation findings).

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/or could have been placed during earthworks using site-won material from within the wider hospital. ACM was identified in fill/surficial soil during the PSI 2022 at one location (BH12 in the south-western section of the site).	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), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), polychlorinated biphenyls (PCBs) and asbestos.
Use of pesticides – Pesticides may have been used beneath the buildings and/or around the site for typical pest control applications.	Heavy metals and OCPs.
Hazardous Building Material – Hazardous building materials may be present as a result of former building and demolition activities onsite (not observed in the historical aerial photographs), or on the wider hospital property. These materials may also be present in the existing buildings/structures on site. Bonded ACM was identified in surficial soil as noted above. This may be associated with historical demolition on site.	Asbestos, lead and PCBs.
Offsite - Fuel storage on Wider Hospital Property – At least two USTs were identified in the Safework NSW search results on the wider hospital property. Records indicated that the USTs were used to store petrol. An AST is also in this vicinity (see Figure 2).	Lead, TRH, BTEX and PAHs.

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	Potential mechanisms for contamination include: • Fill material – importation of impacted material, 'top-down' impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material);

	• Use of pesticides – 'top-down' and spills (e.g. during normal use, application and/or improper storage); • Hazardous building materials – 'top-down' (e.g. demolition resulting in surficial impacts in unpaved areas); and • Off-site (fuel storage on wider hospital property) – 'top-down', spills (e.g. during filling of the tanks and/or dispensing activities), or sub-surface release (e.g. from leaking tank or pipework.
Affected media	Soil and groundwater have been identified as potentially affected media. The potential for soil vapour impacts will initially be assessed via the soil and groundwater results. Soil vapour sampling is outside the scope of the DSI.
Receptor identification	Human receptors include site occupants/users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users and recreational water users in the down-gradient water body (Kully Bay). Ecological receptors include terrestrial organisms and plants within unpaved areas (including the proposed landscaped areas), and marine ecology in Kully Bay. Kully Bay supports a marine ecosystem and is also utilised for recreational purposes.
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). The potential for exposure would typically be associated with the current uses, proposed construction and excavation works, and future use of the site. Potential exposure pathways for ecological receptors include primary 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 pathways to groundwater (for human receptors) would be via vapour intrusion, or potential contact with groundwater entering the bay. Exposure to ecological receptors could also occur in the bay.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the existing or proposed buildings (either from soil contamination or volatilisation of contaminants from groundwater); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and • Migration of groundwater off-site and into nearby water bodies, including aquatic ecosystems and those being used for recreation.
Presence of preferential pathways for contaminant movement	None identified.

5 SAMPLING, ANALYSIS AND QUALITY PLAN

5.1 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.

5.1.1 Step 1 - State the Problem

The previous investigations identified potential sources of contamination/AEC at the site that may pose a risk to human health and the environment. Additional investigation data is required to characterise the site, assess the risks posed by the contaminants in the context of the proposed development/intended land use, and facilitate the development of a RAP. 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 approval of the development consent and issue of construction/occupancy certificates.

The site is an operational hospital and there are constraints associated with access. Most notably, sampling within the building footprints is not practicable as this involves coring concrete and substantial disturbance. A data gap will remain in these areas and this will need to be compensated for via procedures in the RAP.

5.1.2 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 of the laboratory results above the site assessment criteria?
- 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?

5.1.3 Step 3 - Identify Information Inputs

The primary information inputs required to address the decisions outlined in Step 2 include the following:

- Existing site information from the previous investigations, 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, fibre cement and groundwater for the CoPC identified in the CSM; and
- Field and laboratory QA/QC data.

5.1.4 Step 4 - Define the Study Boundary

The sampling will be confined to the site boundaries as shown in Figure 2 and will be limited vertically to maximum sampling depths of approximately 3mBGL (or prior refusal) for soil/bedrock, and approximately 8mBGL for groundwater (spatial boundary). The sampling is expected to be completed between July and August 2023 (temporal boundary).

5.1.5 Step 5 - Develop an Analytical Approach (or Decision Rule)

The laboratory data will be assessed against relevant Tier 1 screening criteria (referred to as SAC), as outlined in Section 5.1.5.1. 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 source-pathway-receptor (SPR) linkages.

For this investigation, 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 will likely not be undertaken due to the spatial distribution of the data and the data gaps associated with the access constraints.

Groundwater data will be compared directly to the SAC and evaluated with regards to valid/complete SPR-linkages.

5.1.5.1 Tier 1 Screening Criteria

5.1.5.1.1 Soil

Soil data will be compared to relevant Tier 1 screening criteria in accordance with NEPM (2013). Health Investigation Levels (HILs) will be based on a 'residential with accessible soils, including childcare' land use exposure scenario (HIL-A). These criteria have been adopted to make a preliminary assessment of risks to the most sensitive receptors (i.e. children) and are also suitably protective of adults in a commercial land use scenario such as a hospital. In our opinion, the other generic land-use types in NEPM (2013) are less appropriate for a hospital land use scenario where there are relatively large unpaved/grassed/landscape areas. Health Screening Levels (HSL) for asbestos will also be based on land use Type A.

HSLs for assessing hydrocarbon risks from vapour intrusion will be based on land use Type A/B and will be derived conservatively using a sand soil type and a depth interval of 0-1m for the initial data screening. These may be adjusted for depth and soil type where deemed appropriate.

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). Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) will also be considered following evaluation of human health and ecological risks, and risks to groundwater.

Regarding the ecological screening criteria, the Ecological Investigation Levels (EIL) will be derived using the Ambient Background Concentration (ABC) from the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)[6] and using site specific physiochemical data for soil pH, clay content and Cation Exchange Capacity (CEC) to select the Added Contaminant Limit (ACL) values in Schedule B(1) of NEPM (2013). NEPM (2013) recommends that ecological SAC are applied to the top 2m of soil in accordance with the recommendations of the NEPM (2013).

5.1.5.1.2 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)[7]. Environmental values for this investigation include aquatic ecosystems, human uses (i.e. primary and secondary contact associated with recreational water use in down-gradient water bodies) and human-health risks in non-use scenarios (i.e. exposure to volatile contaminants above groundwater contamination plumes).

Where groundwater is observed to be deeper than 2mBGL and where there is at least 2m of soil above the groundwater and the proposed site level, the HSLs for a 'low-high density residential' exposure scenario (HSL-A/HSL-B) will be applied. HSLs will be calculated based on the soil type and the observed depth to groundwater.

It is noted that groundwater was recorded at depths shallower than 2mBGL during the previous investigation. On this basis, the NEPM (2013) HSLs will not be strictly applicable for some locations. Where these conditions occur and the NEPM (2013) HSLs cannot be applied, a SSA will be undertaken for the Tier 1 screening of human health risks posed by volatile contaminants in groundwater based on the following:

- Australian Drinking Water Guidelines 2011 (updated 2018)[8] for BTEX compounds and selected VOCs;
- World Health Organisation (WHO) document titled Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality (2008)[9] for petroleum hydrocarbons. A conservative SAC of 100µg/L will be applied to TRH F1 and F2; and
- USEPA Region 9 screening levels for naphthalene (threshold value for tap water) and for any other contaminants reported above the PQLs, where there are no ADWG 2011 guidelines.

ADWG 2011 criteria will be multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. incidental exposure during development works, primary and secondary contact with irrigation water or during recreational exposure). These have been deemed as 'recreational' SAC.

Groundwater Investigation Levels (GILs) for 95% protection of freshwater species are to be adopted based on the Default Guideline Values in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)[10]. The 99% trigger values are to be utilised, where required, to account for bioaccumulation.

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6 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

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

8 National Health and Medical Research Council (NHMRC), (2018). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

9 World Health Organisation (WHO), (2008). *Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality* (referred to as WHO 2008)

10 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)

Low and moderate reliability trigger values are also to be adopted for some contaminants where high-reliability trigger values do not exist.

5.1.5.2 Quality Assurance/Quality Control (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), and trip spike (for volatiles), trip blank (for volatiles) and rinsate (for volatiles) samples (one for each medium sampled to assess the adequacy of field practices).

The suitability of the laboratory data is to be 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 will be undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, the most conservative concentration reported are to be adopted.

5.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

The PQLs of the analytical methods are to be 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 will be provided.

5.1.6 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 will be 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.

We do not anticipate applying statistical tests to the soil data due to the data gaps that will remain in the building footprints and we anticipate that results will be assessed as either above or below the SAC and in the context of valid SPR linkages. However, should statistical analysis be applied, for this investigation, the null hypothesis (H_0) is that the 95% UCL for the CoPC are greater than the SAC. The alternative hypothesis (H_A) is that the 95% UCL for the CoPC (and other considerations for asbestos and groundwater) are less than the SAC.
Potential outcomes include Type I and Type II errors as follows:

- Type I error of determining that the soil is acceptable for the proposed land use when it is not (wrongly rejects true H_0), includes an alpha (α) risk of 0.05; and

- Type II error of determining that the soil is unacceptable for the proposed land use when it is (wrongly accepts false H_0), includes beta (β) risk of 0.2.

Statistical analysis will not apply to asbestos, groundwater data, therefore these data will be assessed based on a multiple lines of evidence and a risk-based approach.

Data Quality Indicators (DQI) for field and laboratory QA/QC samples are defined below. An assessment of the DQI's is to be made in relation to precision, accuracy, representativeness, completeness and comparability.

Field Duplicates
Acceptable targets for precision of field duplicates 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 trip blank samples will be less than the PQL.

Trip Spikes
Acceptable targets for trip spike samples will be 70% to 130%.

Laboratory QA/QC
The suitability of the laboratory data will be assessed against the laboratory QA/QC criteria. These criteria are 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 typical limits 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; and
- 60-140% recovery acceptable for organics.

Surrogate Spikes
- 60-140% recovery acceptable for general organics.

Method Blanks
- All results less than PQL.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence will be reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is to be undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, we will adopt the most conservative concentration reported.

5.1.7 Step 7 - Optimise the Design for Obtaining Data

The most resource-effective design will be used in an optimum manner to achieve the objectives. 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.

5.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this investigation is outlined in the table below:

Table 5-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Plan	Samples for the investigation will be collected from a total of 20 borehole locations. The proposed sample locations are shown on Figure 2.2 attached in Appendix A. Where practicable, samples are to be positioned on a square grid plan. However, this will not be achievable in all areas due to access constraints and therefore the plan overall is considered to be judgemental. The sampling locations are broadly positioned for site coverage, taking into consideration the previous sampling locations, identified AEC, and areas that are not easily accessible due to onsite obstructions (either above or below ground).
Set-out and Sampling Equipment	Sampling locations will be set out using a laser range finder or a tape measure, set-out from the existing boundaries and site features. A margin of error in the order of ±1m is expected using the range finder. In-situ sampling locations will be checked for underground services by an external contractor prior to sampling. Samples will be collected using a combination of a mechanical excavator (from a pendulum auger) and a drill rig with spiral augers and standard penetration test (SPT) split spoon sampler. Soil samples will be obtained from the SPT sampler as a preference in boreholes, or from the auger where the SPT sampler is not effective (e.g. in bedrock)/excavator mounted auger. JKE acknowledge that the use of an auger for soil sampling may result in some loss of volatiles. However, we consider that there is no better alternative when sampling deeper bedrock.
Sample Collection and Field QA/QC	The locations are to be logged to an appropriate standard in accordance with NEPM (2013) and all samples will be documented on the logs. Soil samples for contamination are to be collected from the fill and natural profiles based on field observations, to depths as noted above. Samples for contamination analysis are to 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 splitting procedure will include alternate filling of the jars with soil.

Field Screening	A portable Photoionisation 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 are maintained on file by JKE and are to be included in the DSI report. Fill/spoil from all sampling location will be field screened. The field screening for asbestos quantification from the remaining sampling locations will include the following: • A bulk sample will be collected from fill at 1m intervals, or from each distinct fill profile to the extent possible; • Each bulk sample will be 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. Alternatively, due to the cohesive nature of the soils, the samples may be placed on a contrasting support (blue tarpaulin) and inspected for the presence of fibre cement. Any soil clumps/nodules are to be disaggregated; • 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 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).
Decontami-nation and Sample Preservation	Sampling personnel will use disposable nitrile gloves during sampling activities. Re-usable sampling equipment will be decontaminated using Decon and potable water. Soil samples will be preserved by immediate storage in an insulated sample container with ice or ice bricks. 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.

5.3 Groundwater Sampling Plan and Methodology

The groundwater sampling plan and methodology is outlined in the table below:

Table 5-2: Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	Where groundwater is present, it is proposed to sample the two existing groundwater wells that were installed during the fieldwork for the PSI 2022. These include MW4 and MW5 as shown on Figure 2.2 in Appendix A. One new well, MW213 is also proposed, positioned in the south-west of the site for site coverage and in an attempt to be at the closest point to the off-site AST/USTs (subject to access).
Monitoring Well Installation Procedure	We propose to install the new groundwater monitoring well using auger drilling methods. The monitoring well construction details will be documented on the appropriate borehole log attached in the appendices. The monitoring wells were installed to depths of approximately 8m below ground level. The wells were generally 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 proposed well construction is considered to be appropriate for screening purposes to assess general aquifer conditions with regards to the recommended monitoring well installation requirements in Schedule B2 of NEPM 2013. The installation depths and screen intervals may vary depending on observations (i.e. water strike) during drilling.
Monitoring Well Development	Prior to development, the monitoring wells will be checked for the presence of Light Non-Aqueous Phase Liquids (LNAPL) using a new disposable bailer and the water level will be measured using an electronic dip meter. The monitoring well head space will also be checked for VOCs using a calibrated PID unit. The monitoring wells will be developed using a submersible electrical pump with single-use tubing. A calibrated water quality meter will be used to measure pH, EC, DO, Eh and temperature. Development will occur until either the well is pumped dry or until steady state conditions are achieved. For the DSI, steady state conditions are defined as the pH measurements over a one-minute time interval varying by less than 0.2 units, the difference in EC over the same period varying by less than 10%, and the SWL not being in drawdown. The monitoring wells will be allowed to recharge for approximately 2-3 days prior to sampling.
Groundwater Sampling	Prior to sampling, the monitoring wells will be checked for the presence of LNAPL using an inter-phase probe electronic dip meter and a new disposable bailer. The monitoring well head space will also be checked for VOCs using a calibrated PID unit. Samples will be obtained using a peristaltic pump, after purging to achieve steady state conditions. Where steady state conditions cannot be achieved, the wells will be sampled whilst the SWL is in drawdown. Groundwater samples will be obtained directly from the single use tubing and placed in the sample containers. Duplicate samples are to be obtained by alternate filling of sample containers. This technique will be 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 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.
Decontaminant and Sample Preservation	During development (and sampling), the pump will be flushed between monitoring wells with potable water (single-use tubing will be used for each well). The pump tubing will be discarded after each sampling event and replaced. The samples will be preserved with reference to the analytical requirements and placed in an insulated container with ice. 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.

5.4 Laboratory Analysis

Samples will be analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. The laboratory details are provided below:

Table 5-3: 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)

An allowance has been made for the following:

- Up to 10 selected soil samples will be analysed for: heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRHs; BTEX; OCPs and OPPs; and PCBs;
- Up to 20 selected soil samples will be analysed for: heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH; and BTEX;
- Up to 20 selected soil samples will be analysed for: asbestos (500ml);
- Up to four selected fill/natural soil samples will be analysed for: pH; cation exchange capacity (CEC); and clay content (%);
- Up to two selected fibre cement fragments, if found on or in soil, will be analysed for asbestos;
- Up to three groundwater samples will be analysed for the following: heavy metals; TRH/BTEX; low level PAHs; pH; and electrical conductivity (EC); and
- Collection and analysis of QA/QC samples (including intra- and inter-laboratory duplicates, trip blank, trip spike and field rinsate samples).

The soil analysis will generally be targeted to fill samples. Deeper samples may be analysed based on the results of the fill soils, or if other indicators such as staining or odours are encountered. A staged approach to soil sample analysis will be undertaken to allow for targeting areas based on the results of the initial analysis.

5.5 Reporting Requirements

A DSI report is to be prepared presenting the results of the investigation, generally in accordance with the NSW EPA Consultants Reporting on Contaminated Land, Contaminated Land Guidelines (2020)[11].

[11] NSW EPA, (2020). *Consultants Reporting on Contaminated Land, Contaminated Land Guidelines*

6 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 landuse. 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 G - SAQP

Appendix A: JKE SAQP Figures

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM	Title: **SITE LOCATION PLAN**	
	Location: 85-91 COWPER STREET, WARRAWONG, NSW	
	Project No: E34300PT2-SAQP	Figure No: 1
This plan should be read in conjunction with the Environmental report.	**JKEnvironments**	

PLOT DATE: 27/07/2023 9:10:17 AM DWG FILE: K:\5C EIS JOBS\34000'S\E34300PT DUNMORE\CAD\E34300PT2\E34300PT2-SAQP.DWG

Appendix G - SAQP

LEGEND

Symbol	Description
(red dashed line)	APPROXIMATE SITE BOUNDARY
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
FCF(Surface)	FIBRE CEMENT FRAGMENT LOCATION, NUMBER AND DEPTH (Surface/m)
BH102	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH/MW101	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH102	PROPOSED BOREHOLE LOCATION AND NUMBER
BH/MW213	PROPOSED BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION AND NUMBER

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

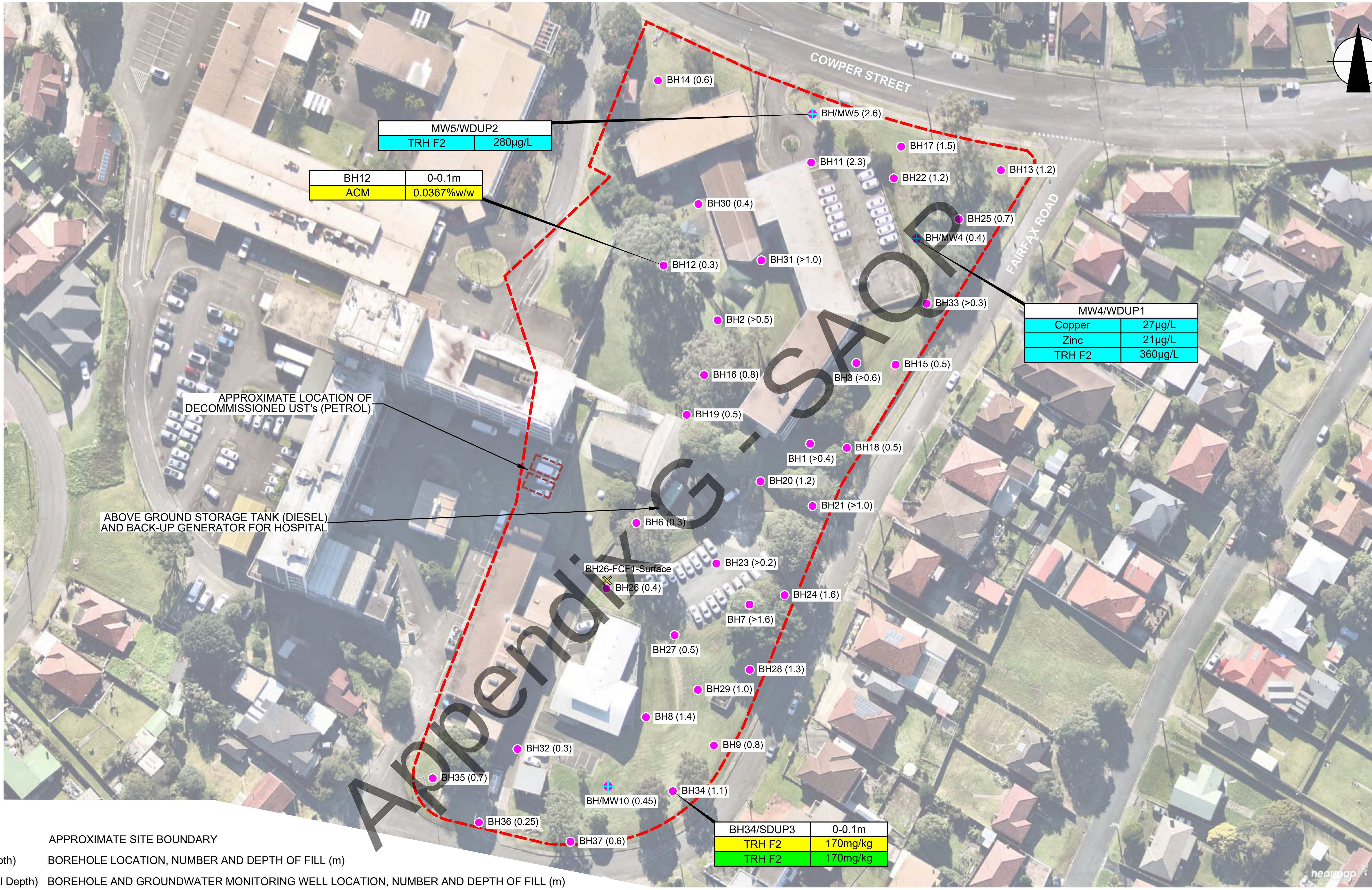
0 10 20 30 40 50
SCALE 1:1000 @A3 METRES

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

Title:	PROPOSED SAMPLE LOCATION PLAN
Location:	85-91 COWPER STREET, WARRAWONG, NSW
Project No:	E34300PT2-SAQP
Figure No:	2.2

JKEnvironments

PLOT DATE: 27/07/2023 9:16:43 AM DWG FILE: K:\5C EIS JOBS\34000'S\E34300PT DUNMORE\CAD\E34300PT2-SAQP.DWG



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)
FCF(Surface)	FIBRE CEMENT FRAGMENT LOCATION, NUMBER AND DEPTH (Surface/m)

SAMPLE ID	DEPTH (metres)
CHEMICAL	CONCENTRATION

SOIL/SURFACE SAMPLE EXCEEDANCE

SAMPLE ID	-
CHEMICAL	CONCENTRATION (µg/L)

GROUNDWATER SAMPLE EXCEEDANCE

- (yellow) SOIL/SURFACE CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK
- (green) SOIL/SURFACE CONTAMINATION ABOVE SAC FOR ECOLOGICAL RISK
- (cyan) GROUNDWATER CONTAMINATION ABOVE SAC

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 10 20 30 40 50

SCALE 1:1000 @A3 METRES

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

Title: **SAC EXCEEDANCE PLAN**

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Project No: E34300PT2

Figure No: 3

JKEnvironments

PLOT DATE: 1/11/2022 8:49:18 AM DWG FILE: S:\5 EIS\5C EIS JOBS\34000'S\E34300PT DUNMORE\CAD\E34300PT2\E34300PT2.DWG

Appendix B: 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)[12] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[13]. 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;

[12] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)
[13] 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

Contaminated Land Management Act 1997 (NSW)

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

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

State Environmental Planning Policy (Resilience and Hazards) 2021

JKE AMP

REPORT TO

NSW HEALTH INFRASTRUCTURE

ON

ASBESTOS MANAGEMENT PLAN

FOR

DETAILED (STAGE 2) SITE INVESTIGATION

AT

85-91 COWPER STREET, WARRAWONG, NSW

Date: 26 July 2023

Ref: E34300PT2-AMP

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DOCUMENT REVISION RECORD

Report Reference	Report Status	Report Date
E34300PT2rpt-AMP	Final Report	26 July 2023

This Report (which includes all attachments and annexures) has been prepared by JKE for the Client, and is intended for the use only by JKE, JK Geotechnics (JKG) and that Client.

This Report has been prepared pursuant to a contract between JKG and the Client and is therefore subject to:
a) JKG's proposal in respect of the work covered by the Report;
b) The limitations defined in the client's brief to JKG; and
c) The terms of contract between JKG and the Client, including terms limiting the liability of JKG/JKE.

If the Client, or any person, provides a copy of this Report to any third party, such third party must not rely on this Report, except with the express written consent of JKE/JKG which, if given, will be deemed to be upon the same terms, conditions, restrictions and limitations as apply by virtue of (a), (b), and (c) above.

Any third party who seeks to rely on this Report without the express written consent of JKE/JKG does so entirely at their own risk and to the fullest extent permitted by law, JKE/JKG accepts no liability whatsoever, in respect of any loss or damage suffered by any such third party.

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Appendix A: Report Figures

Abbreviations

Asbestos Containing Material	**ACM**
Asbestos Management Plan	**AMP**
JK Environments	**JKE**
National Association of Testing Authorities	**NATA**
Personal Protective Equipment	**PPE**
Protection of the Environment Operations	**POEO**
Work Health and Safety	**WHS**

Units

Fibres per millilitre	**Fibres/mL**
Kilogram	**kg**
Micron	**µm**

1 INTRODUCTION

NSW Health Infrastructure ('the client') commissioned JK Environments (JKE) to carry out an intrusive environmental investigation for the proposed new Warrawong Community Centre development at 85-91 Cowper Street, Warrawong, NSW. JK Environments (JKE) has prepared this Asbestos Management Plan (AMP) exclusively to manage asbestos-related risks during the intrusive drilling works. This AMP is not intended to be used for the day-to-day management of asbestos at the site during the typical site operations and is not to be used in relation to managing any asbestos materials associated with the buildings or structures on site.

The proposed scope of intrusive field works at the site includes the drilling of boreholes for environmental purposes. This AMP includes management requirements for working, handling, temporary storage, removal, transportation and disposal procedures, and visual clearance inspections. The AMP has been prepared generally in accordance with the requirements of SafeWork NSW.

1.1 Aims/Objectives

The aim of the AMP is to outline the procedures to be implemented in order to effectively manage asbestos-impacted material at the site during intrusive drilling works, in accordance with relevant Codes of Practice and Work Health and Safety (WHS) legislation. The objectives of the AMP are to:

- Outline the applicability of the AMP and the various roles and responsibilities;
- Provide a protocol for managing the drilling works, including the identification of safe work procedures to minimise potential health effects to site workers/contractors and adjacent land users; and
- Document procedures for potential asbestos waste handling and transport.

1.2 Scope of Work

The scope of work included preparation of the AMP which provides:

- Details of roles and responsibilities;
- Methodologies for protecting workers during intrusive field works, including personal protective equipment (PPE), decontamination and visual surface clearance requirements; and
- Procedures and protocols to manage the asbestos related risks, minimise potential asbestos exposure risks to personnel/workers involved in the field works, safe handling of asbestos containing materials and minimisation of potential asbestos exposure risks to the general public/site users in the vicinity of the proposed work areas on site.

The scope of work was undertaken with reference to the WHS Regulation 2017 and the Safe Work Australia Codes of Practice: How to Manage and Control Asbestos in the Workplace (2020)[1]; and How to Safely Remove Asbestos (2020)[2]. Other guidelines and legislation/regulations have been referenced throughout the AMP where applicable.

[1] Safe Work Australia (2020). *Code of Practice How to Manage and Control Asbestos in the Workplace*. (referred to as CoP How to Manage and Control Asbestos in the Workplace) (July 2020)

[2] Safe Work Australia (2020). *Code of Practice How to Safely Remove Asbestos*. (referred to as CoP How to Safely Remove Asbestos) (July 2020)

2 SITE DETAILS

2.1 Site Identification

Table 2-1: Site Identification

Site Address:	85-91 Cowper Street, Warrawong, NSW
Lot & Deposited Plan:	Lots 21 to 26 & Lots 50 to 53 in DP23670 and part of Lots 39 to 41 and 49 in DP23670
Current Land Use:	R2: Low density residential
Site Area (m^2) (approx.):	8,950
Geographical Location (decimal degrees) (approx. centre of site):	Latitude: -34.4863511 Longitude: 150.8790082
Site Plans:	Appendix A

3 ASBESTOS CONTAMINATION INFORMATION

For the purpose of this AMP, it is assumed that the fill/soil may contain bonded (non-friable) asbestos containing material (ACM). Previous investigation at the site and wider hospital by JKE have identified asbestos in fill. A single fragment of ACM has been identified on the site in surficial soil during an investigation in 2022.

The exposure pathway for asbestos is via inhalation of airborne asbestos fibres. Exposure to asbestos fibres poses a potential risk to human health. The potential for release and transport of asbestos fibres via disturbance of soil containing asbestos has the potential to increase during the proposed mechanical drilling works. The human receptors most at risk of asbestos fibre release during field works and soil disturbance activities include the drilling crew, field engineer and nearby land users (e.g. site workers, contractors and visitors). Risks to these receptors will be mitigated under this AMP.

Asbestos fibres can range in size from 0.1 to 10 microns (µm) (one tenth the size of a grain of sand) and are a potential particulate respiratory hazard. The small fibres gain relatively easy access to the lung airways and air sacs. Damage to the respiratory tract generally tends to be time/dose dependent. An individual exposed to high doses of asbestos for long periods of time will have an increased risk of developing asbestos related diseases. In addition, the effects of asbestos related diseases are usually not detectable for 1 to 30 years after the initial exposure. This is called the latency period, and is a distinguishing feature of asbestos related diseases.

4 APPLICATION OF THE AMP AND RESPONSIBILITIES

4.1 Application of the AMP

This AMP shall apply from the commencement of soil/fill disturbance works at each borehole location, until disturbance of the fill ceases and the borehole is reinstated. The AMP is not intended to be a long-term management plan and as such it will cease to apply on completion of the field works.

Given the extent of previous investigation at the site and wider hospital property, this document has been prepared as a precautionary plan with the intent that normal works will occur/be undertaken unless ACM is encountered. The occurrence of suspected ACM in soils will trigger the need to implement management procedures as outlined in Section 6.

4.2 Roles and Responsibilities

JKE is primarily responsible for the implementation of this AMP and will be responsible for the work area, arranging air monitoring during the works, implementing risk mitigation measures (as required) and managing any occurrences of asbestos encountered during drilling.

The JKE field scientist is deemed to be a competent person and will be responsible for:

- Coordinating airborne asbestos monitoring (subcontracted to Clear Safe);
- Undertaking asbestos clearance inspections (as required);
- Undertaking asbestos sampling and assessment (as required);
- Providing advice and recommendations arising from monitoring and/or inspections during drilling;
- Examining and providing comment on WHS documentation with respect to asbestos assessment, management and control (as required); and
- Notifying the JKE Project Manager, and the client if required, of any observed or documented non-compliance with this AMP.

In the event that friable asbestos is observed, JKE has a Licenced Asbestos Assessor on staff to provide advice and any necessary clearances.

5 LEGISLATIVE REQUIREMENTS

5.1 Legislative Requirements and Regulations/Guidelines

All works must be undertaken with regards to (but not limited to) the following:

- Protection of the Environment Operations (POEO) Act 1997 (NSW);
- POEO (Waste) Regulation 2014 (NSW);
- Work Health and Safety Act 2011 (NSW);
- Work Health and Safety Regulation 2017 (NSW);
- Contaminated Land Management Act 1997 (NSW);
- CoP How to Manage and Control Asbestos in the Workplace;
- CoP How to Safely Remove Asbestos;

- National Occupational Health and Safety Commission (NOHSC), (2005). Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition (NOHSC:3003 [2005]);
- NOHSC, (2005). Guidance Note on the Interpretation of Exposure Standards for Atmospheric Contaminants in the Occupational Environment 3rd Edition (NOHSC:3008 [1995]);
- AS/NZS 1715:2009 Selection, Use and Maintenance of Respiratory Protective Devices; and
- AS/NZS 1716:2012 Respiratory Protective Devices.

5.2 Non-Compliance with the AMP

Where a non-compliance with this AMP is identified, JKE's project manager is to be notified. Where a non-compliance cannot be rectified, site works should cease, the AMP and asbestos controls reviewed, and revisions made as required.

5.3 SafeWork NSW Notification

Asbestos removal works triggering notification to SafeWork NSW is not required.

6 MANAGEMENT

This section outlines the requirements for managing the intrusive field works which we understand will broadly include:

1) Mechanical drilling using spiral augers mounted on an excavator/drill rig; and
2) Environmental soil sampling and field assessment for asbestos in soil.

6.1 Airbourne Asbestos Fibre Monitoring

During the intrusive field works (drilling with auger mounted excavator/drill rig), airborne asbestos fibre monitoring (referred to herein as air monitoring) will be undertaken by the subcontractor (Clear Safe) using calibrated portable air sampling pumps. Monitoring locations will be determined by Clear Safe and shall include two locations surrounding each borehole/work area. At the end of each day, the pumps and attached filters will be collected and analysed at a NATA-accredited laboratory.

Air monitoring works shall be conducted in accordance with NOHSC Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition (NOHSC:3003 [2005]). The results of air monitoring are to be provided to the JKE. The following action levels will be applied upon receipt of results:

- Reading of less than 0.01 fibres/mL – control measures implemented were appropriate and no action required; and
- Reading greater than 0.02 fibres/mL - control measures implemented may not have been appropriate, further action/site rectification may be required. SafeWork may need to be notified.

6.1.1 General Personal Protective Equipment (PPE)

PPE for site personnel is to include

- Steel-capped boots (preferably lace-less);

- Hard hat meeting relevant standards;
- High visibility clothing;
- Gloves; and
- P2 rated disposable dust mask, or a half-face respirator fitted with an appropriate particulate filter in compliance with the relevant standards. Respiratory Protective Devices and be used in accordance with AS/NZS 1715:2009.

6.2 Finding of ACM – Contingency Management Plan

As previously stated, this document has been designed as a precautionary plan with the intent that normal works will occur/be undertaken unless suspected ACM is encountered. The occurrence and finding of suspected ACM will trigger the need to initially stop work, assess the circumstances, then implement the contingency management procedures as outlined below:

6.2.1 Field Work Procedures

The following actions are to be implemented:

- To minimise the release of fibres into the air the soil will be kept damp at all times (but not flooded). This will include the use of water sprays where necessary. If it is safe to do so, the surface area around the borehole location will be covered with plastic sheeting;
- The JKE field scientist will inspect the ground surface following drilling and reinstatement of the borehole to confirm there is not visible asbestos material; and
- The air monitoring subcontractor (Clear Safe) will be conducting air monitoring throughout the works.

6.2.2 General Personal Protective Equipment (PPE)

Additional PPE for site personnel in the asbestos work area is to include

- Disposable coveralls that prevent tearing and penetration of asbestos fibres (e.g. coveralls type 5, category 3 per EN ISO 13982–1 or equivalent); and
- Disposable boot covers made of a material consistent with the disposable coveralls or:
    - Gumboots (steel toed) may be worn in the asbestos removal area if they are decontaminated upon exiting the asbestos removal area; or
    - A separate set of work boots may be maintained in the asbestos work area.

Disposable items of PPE are to be bagged prior to being removed from the asbestos work area. The bagged PPE will be deemed asbestos waste and will be transported back to the JKE office where there is a designated asbestos waste bin.

6.2.3 Isolation, Barricading and Signage

JKE is to take reasonable steps so the necessary measures are in place for the effective exclusion of unauthorised persons to asbestos work areas. Use of signage is not proposed considering the site is not accessible by the general public and we are not expecting to be in the vicinity of others during the work.

6.2.4 Restriction of Access to Asbestos Work Area / Zone

Access to the asbestos- work area(s) will be restricted only to:

- Workers engaged for the intrusive field works, including JKE's field scientist, and the excavator operator/drillers;
- Other persons associated with the intrusive field works such as the Licensed Asbestos Assessor (where required); and
- Anyone allowed under the WHS Regulation or another law to be in the asbestos works area.

6.2.5 Wet Methods

A low-pressure water spray is to be available and utilised as required for wetting down asbestos-impacted soils. This will be the primary control for dust generation and is considered adequate given the small-scale nature of the disturbance.

6.2.6 Decontamination

A decontamination zone is to be established adjacent to a single entry/exit point to the asbestos work area. Personal decontamination will include:

- Wiping down boots and coveralls with a wet rag and scraping off any soil clods; and
- Removing coveralls, gloves and then respirator/mask and placing in appropriate plastic asbestos waste bags within the provided disposal bin located at the entry/exit point.

Decontamination of the drilling equipment will include wiping down of the augers and any other equipment that comes into contact with the fill/soil.

6.2.7 Waste Management

6.2.7.1 Asbestos Waste (consumables and visible ACM)

Disposable items of PPE are to be bagged prior to being removed from the asbestos work area. The bagged PPE will be deemed asbestos waste and will be transported back to the JKE office where there is a designated asbestos waste bin. Asbestos waste shall not be allowed to accumulate excessively within the work area and shall be bagged or placed in appropriate receptacles as the work proceeds.

Sporadic fragments of ACM may be identified during the works and it is anticipated that this material will be sampled for further laboratory analysis. Sampling is to occur in accordance with our standard field practices.

6.2.7.2 Loading, Transport and Disposal of Asbestos Waste

The quantity of asbestos waste (i.e. the consumable PPE items) does not trigger a need to track or register the disposal. It is noted that Part 7 of the POEO Waste Regulation set outs the requirements for the transportation and management of asbestos waste and Clause 79 of the POEO Waste Regulation requires waste transporters to provide information to the NSW EPA regarding the movement of any load in NSW of more than $10m^2$ of asbestos sheeting, or 100 kilograms of asbestos waste. To fulfil these legal obligations, asbestos waste transporters must use WasteLocate. However, it is noted that these thresholds will not be met for the proposed work.

A person must not cause or permit asbestos waste in any form to be re-used or recycled.

6.2.8 Clearance

JKE field staff will visually check the ground surface and clear any visible fibre cement/suspected ACM prior to moving to the next location.

6.2.9 Significant Finds Contingency

In the event that the JKE scientists considers that there is a substantial amount of ACM in the soil, or if the material is suspected of being friable asbestos, all works must cease and the JKE licenced asbestos assessor must be contacted to provide further advice.

7 DOCUMENTATION REQUIREMENTS

JKE will maintain records in relation to the works and implementation of the AMP. This will include but will not be necessarily limited to the following:

- Air monitoring report;
- Waste disposal dockets (noting this docket may not be available for some time as JKE transports relatively small quantities of asbestos waste to licenced facilities sporadically);
- Incident reports.

8 LIMITATIONS

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during future development or maintenance 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 future work;
- The preparation of this report has 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 have not and will not make any determination regarding finances associated with the site;

- 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.

Appendix A: Report Figures

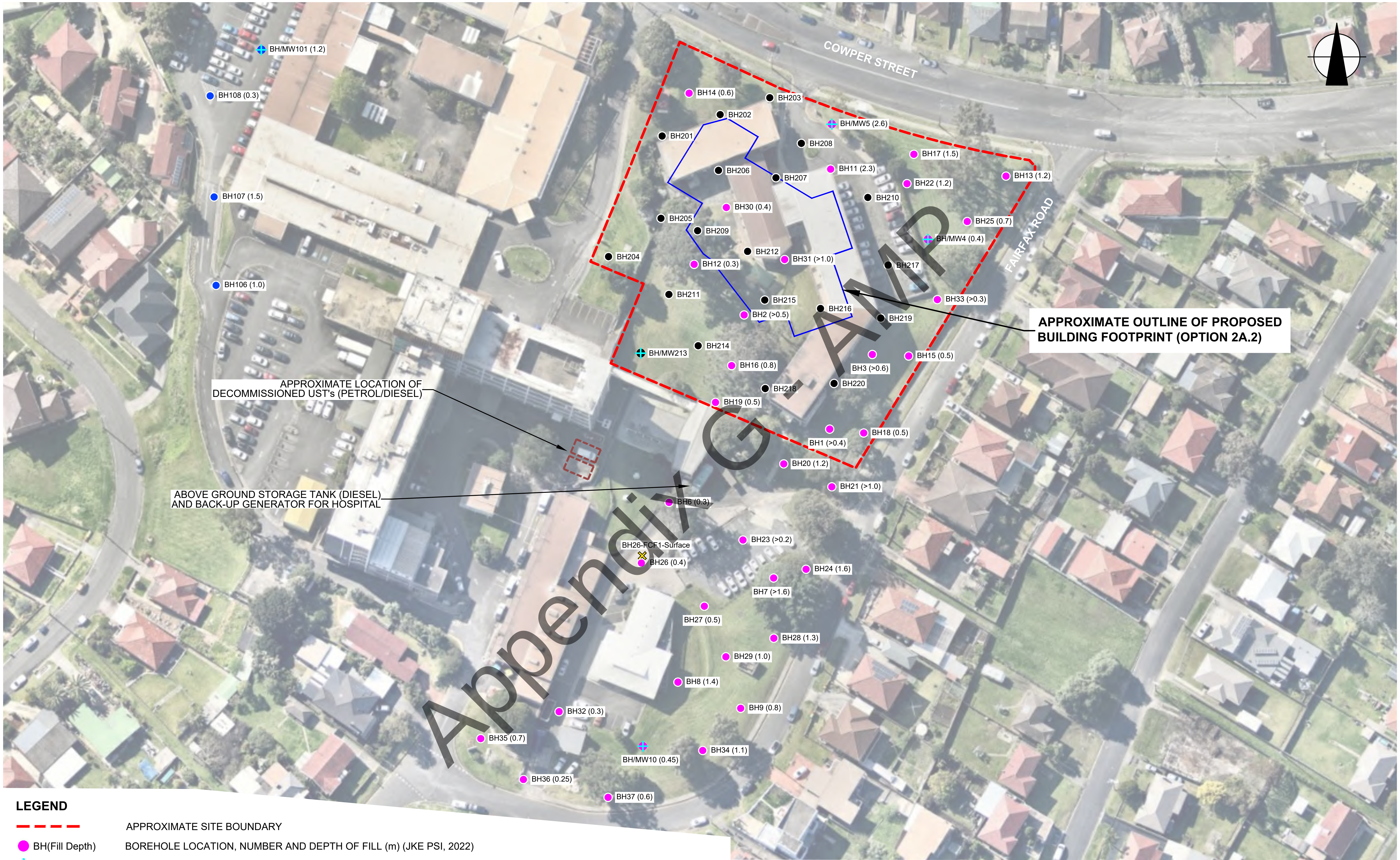
AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

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

Title:	**SITE LOCATION PLAN**
Location:	85-91 COWPER STREET, WARRAWONG, NSW
Project No: E34300PT2-SAQP	Figure No: 1

JKEnvironments

PLOT DATE: 27/07/2023 9:10:17 AM DWG FILE: K:\5C EIS JOBS\34000'S\E34300PT DUNMORE\CAD\E34300PT2\E34300PT2-SAQP.DWG



LEGEND

- - - -	APPROXIMATE SITE BOUNDARY
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2022)
FCF(Surface)	FIBRE CEMENT FRAGMENT LOCATION, NUMBER AND DEPTH (Surface/m)
BH102	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH/MW101	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI, 2023)
BH102	PROPOSED BOREHOLE LOCATION AND NUMBER
BH/MW213	PROPOSED BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION AND NUMBER

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 10 20 30 40 50
SCALE 1:1000 @A3 METRES

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

Title: **PROPOSED SAMPLE LOCATION PLAN**

Location: 85-91 COWPER STREET, WARRAWONG, NSW

Project No: E34300PT2-SAQP

Figure No: 2.2

JKEnvironments

PLOT DATE: 27/07/2023 9:16:43 AM DWG FILE: K:\5C EIS JOBS\34000'S\E34300PT DUNMORE\CAD\E34300PT2\E34300PT2-SAQP.DWG

Groundwater & Calibration Field Sheets

JKEnvironments

Client:	Health Infrastructure	Job No.:	E34300PT2
Project:	Proposed New Warrawong Community Health Centre	Well No.:	MW4
Location:	85-91 Cowper Street, Warrawong, NSW	Depth (m):	~6m

WELL FINISH DETAILS

	Missing cover & gatic Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Development pump	SWL – Before (m):	1.88
Date:	31/7/23	Time – Before:	11.50
Undertaken By:	CB	SWL – After (m):	5.88
Total Vol. Removed:	45 l	Time – After:	12.16
PID Reading (ppm):	0.2		
Comments:			

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0.5	19.18	18.6	739	7.04	-41.6
5	19.20	11.5	735	7.05	-42.9
10	19.19	8.2	734	7.08	-43.8
15	19.22	6.6	733	7.09	-44.0
20	19.23	5.2	728	7.17	-45.5
25	19.34	16.1	701	7.30	-42.8
30	19.33	12.5	703	7.31	-43.5
35	19.37	9.9	704	7.32	-43.1
40	19.66	82.6	765	7.66	-34.1
45	20.04	82.1	762	7.88	-32.8
Well dry	after 45L				

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

well is dry

YSI Used: Hanna Instruments HI98194

Tested By:	CB	**Remarks:**
Date Tested:	31/7/23	- 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:	KT	- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date:	19.8.23	

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E34300PT2
Project:	Proposed New Warrawong Community Health Centre	**Well No.:**	MW5
Location:	85-91 Cowper Street, Warrawong, NSW	**Depth (m):**	~7.45m

WELL FINISH DETAILS

Gatic Cover ☒ Standpipe ☐ Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Develop. pump	**SWL – Before (m):**	2.98m
Date:	31/07/23	**Time – Before:**	10.12 am
Undertaken By:	CB	**SWL – After (m):**	7.1m
Total Vol. Removed:	130L	**Time – After:**	11.31
PID Reading (ppm):	0.1		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
5	22.58	24.4	749	6.94	-54.5
15	22.01	27.6	727	7.15	-52.2
25	21.77	30.1	715	7.0	-34.4
35	21.82	48.2	701	6.98	-31.0
45	21.99	38.7	744	7.11	-48.3
55	21.85	60.6	685	6.99	-29.7
60	21.94	66.1	692	7.02	-29.1
65	21.89	70.2	697	6.99	-28.8
70	21.91	60.4	687	6.99	-29.1
75	21.96	62.3	693	6.99	-30.2
80	21.96	67.6	694	6.99	-29.8
85	21.89	67.4	692	6.97	-27.6
90	21.90	67.6	688	6.96	-28.0
95	21.98	70.5	690	6.95	-27.9
100	22.01	69.2	689	6.94	-28.1
105	21.95	70.1	690	6.91	-28.3
110	21.98	60.5	691	6.91	-28.5
115	21.97	56.8	680	6.93	-30.0
120	22.01	60.2	683	6.92	-29.5
125	22.06	60.3	685	6.92	-29.4
130	22.05	60.3	683	6.91	-29.1

Comments: **Odours (YES / NO) NAPL/PSH (YES / NO), Sheen (YES / NO) Steady State Achieved (YES / NO)**

YSI Used: Hanna Instruments HI98194

Tested By:	CB	**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:	31/7/23	
Checked By:	KY	
Date:	17.8.23	

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	**E34300PT2**
Project:	Proposed New Warrawong Community Health Centre	**Well No.:**	MW204
Location:	85-91 Cowper Street, Warrawong, NSW	**Depth (m):**	8m

WELL FINISH DETAILS

Gatic Cover ☒	**Standpipe** ☐	**Other (describe)** ☐

WELL DEVELOPMENT DETAILS

Method:	Develop pump	**SWL – Before (m):**	1.84
Date:	31/7/23	**Time – Before:**	12.45
Undertaken By:	CB	**SWL – After (m):**	7.93
Total Vol. Removed:	30L	**Time – After:**	1.10pm
PID Reading (ppm):	0.3		

Comments: ~ 30 minutes after well has been put in

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
0.5	19.17	91.5	125	9.41	-50.4
5	19.16	91.4	126	9.40	-50.4
10	19.18	91.3	127	9.41	-50.1
15	19.18	90.2	128	9.38	-49.4
20	19.24	89.5	130	9.38	-49.1
25	19.43	86.6	134	9.35	-48.0
30	19.83	92.8	138	9.28	-44.7
Well dry after 30L					

Comments:Odours (YES / NO) NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: Hanna Instruments HI 98194

Tested By:	CB	**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:	31/7/23	
Checked By:	K.Taylor	
Date:	17-8-23	

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E34300PT2
Project:	Proposed New Warrawong Community Health Centre	**Well No.:**	MW223
Location:	85-91 Cowper Street, Warrawong, NSW	**Depth (m):**	8M

WELL FINISH DETAILS

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Dev Pump	**SWL – Before (m):**	0.65m
Date:	14.8.23	**Time – Before:**	3.30
Undertaken By:	K Taylor	**SWL – After (m):**	7.27m
Total Vol. Removed:	22	**Time – After:**	4.30
PID Reading (ppm):	0.0		

Comments:

DEVELOPMENT MEASUREMENTS

	Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
	5	18.2	10.3	242.8	8.81	-200
	10	18.2	8.8	282.4	8.71	-196.4
	15	18.5	7.5	133.2	8.72	-257.5
	20	17.7	7.4	249.5	8.75	-210.8
20mins	21	17.6	7.1	244.4	8.76	-215.5
20mins	22	16.8	7.5	246.5	8.75	-217.6
			well effectively dry			

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 5

Tested By:	K Taylor	**Remarks:**
Date Tested:	14.8.23	- 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 - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Checked By:		
Date:		

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E34300PT2
Project:	Proposed New Warrawong Community Health Centre	**Well No.:**	MW224
Location:	85-91 Cowper Street, Warrawong, NSW	**Depth (m):**	7.5

7.27

WELL FINISH DETAILS

Gatic Cover ☒ Standpipe ☐ Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	Dev Pump	**SWL – Before (m):**	4.26M.
Date:	15.8.23	**Time – Before:**	10am.
Undertaken By:	KT.	**SWL – After (m):**	6.94M
Total Vol. Removed:		**Time – After:**	10.45
PID Reading (ppm):	0.0.		

Comments:

DEVELOPMENT MEASUREMENTS

	Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
	5	19.8	12.7	322.8	8.15	-209.0
	10.	19.7	6.6	320.2	7.86	-212.1
20min	12	18.7	9.2	316.7	7.76	-250.4
10mins.	13	18.7	8.6	333	7.55	-198.2

well effectively dry.

Comments:Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 5

Tested By:	K.Taylor.	**Remarks:**
Date Tested:	15.8.23	- 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 - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Checked By:		
Date:		

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E34300PT2
Project:	Proposed New Warrawong Community Health Centre	**Well No.:**	MW4
Location:	85-91 Cowper Street, Warrawong, NSW	**Depth (m):**	6.1m

6.2m

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Peristaltic	**SWL – Before:**	1.1
Date:	17.8.23	**Time – Before:**	10am
Undertaken By:	K.Taylor	**Total Vol Removed:**	39
Pump Program No:		**PID (ppm):**	0.1

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
5	1.32	3		17.0	7.1	306.1	6.05	-213.4
10	1.68	6		17.0	2.9	306.6	6.04	-216.2
15	1.97	9		17.3	2.1	308.4	6.03	-218.0
20	2.13	12		17.5	1.9	309.8	6.03	-217.4
25	2.50	15		17.6	1.7	309.5	6.02	-217.3
30	2.81	18		17.5	1.7	305.8	6.01	-218.7
35	3.06	21		17.5	1.8	305.3	6.01	-218.5
40	3.29	24		17.5	1.8	304.5	6.01	-218.3
45	3.67	27		17.5	1.7	304.0	6.01	-219.1
50	4.00	30		17.6	1.7	304.7	6.00	-222.1
55	4.43	33		17.5	1.6	305.6	6.01	-223.5
60	4.78	36		17.5	1.7	305.9	6.01	-223.6
65	5.02	39		17.5	1.7	305.7	6.01	-223.7
			Started 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, 0 x H2SO4 plastic, 1 x unpreserved plastic

YSI used: 5

CWDUP202

Tested By: Katrina Taylor	**Remarks:**
Date Tested: 17.8.23	- Steady state conditions
Checked By:	- difference in the pH less than 0.2 units, difference in conductivity less than 10%
Date:	10% and SWL stable/not in drawdown

JKEnvironments

Client:	Health Infrastructure	Job No.:	E34300PT2
Project:	Proposed New Warrawong Community Health Centre	Well No.:	MW5
Location:	85-91 Cowper Street, Warrawong, NSW	Depth (m):	8.15M

7.94

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Peristaltic	SWL – Before:	2.52
Date:	17.8.23	Time – Before:	11.15 aM
Undertaken By:	K Taylor	Total Vol Removed:	60.
Pump Program No:		PID (ppm):	0.1

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
5	2.67	5		20.5	3.2	752	6.55	-162.0
10	2.86	10		20.7	2.8	772	6.56	-177.2
15	3.03	15		21.2	1.7	778	6.55	-190.1
20	3.27	20		21.2	1.7	784	6.50	-192.4
25	3.44	25		21.1	1.5	783	6.53	-196.7
30	3.66	30		21.0	1.5	782	6.57	-197.0
35	3.81	35		20.9	1.6	782	6.62	-197.8
40	4.05	40		21.5	1.3	813	6.45	-202.2
45	4.21	45		21.5	1.2	822	6.45	-204.2
50	4.21	50		21.5	0.9	823	6.44	-205.7
55	4.21	55		21.5	0.9	823	6.44	-206.4
60	4.21	60		21.5	0.8	823	6.44	-206.4
			Started 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, 0 x H2SO4 plastic, 1 x unpreserved plastic

YSI used: 5

Tested By: Katrina Taylor	**Remarks:**
Date Tested: 17.8.23	- Steady state conditions
Checked By:	- difference in the pH less than 0.2 units, difference in conductivity less than 10%
Date:	10% and SWL stable/not in drawdown

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E34300PT2
Project:	Proposed New Warrawong Community Health Centre	**Well No.:**	MW204
Location:	85-91 Cowper Street, Warrawong, NSW	**Depth (m):**	8M

WELL FINISH

X	Gatic Cover	Standpipe	Other (describe)

WELL PURGE DETAILS:

Method:	Peristaltic pump	**SWL – Before:**	1.86M
Date:	17.8.23	**Time – Before:**	830aM
Undertaken By:	K. Taylor	**Total Vol Removed:**	25L
Pump Program No:		**PID (ppm):**	0.2.

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
5	2.28	3		19.0	7.9	591	6.9	-221.6
10	2.99	6		19.2	1.6	595	6.89	-219.7
15	3.47	9		19.2	1.4	596	6.89	-220.9
20	3.92	12		19.0	1.2	594	6.89	-214.4
25	4.44	15		19.2	1.0	602	6.89	-217.4
30	4.97	18		19.2	1.1	601	6.88	-215.2
35	5.43	21		19.2	1.1	603	6.88	-217.7
40	5.98	24		19.2	1.1	603	6.88	-218.1
42	6.45	25		19.1	1.1	604	6.88	-218.1
			Started 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, 0 x H2SO4 plastic, 1 x unpreserved plastic

YSI used: 5

GWDUP201

Tested By: Katrina Taylor	**Remarks:**
Date Tested: 17.8.23	- Steady state conditions - difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Checked By:	
Date:	

JKEnvironments

Client:	Health Infrastructure	Job No.:	E34300PT2
Project:	Proposed New Warrawong Community Health Centre	Well No.:	MW223
Location:	85-91 Cowper Street, Warrawong, NSW	Depth (m):	8M

7.87

WELL FINISH

X	Gatic Cover		Standpipe		Other (describe)

WELL PURGE DETAILS:

Method:	Bailer	SWL – Before:	6.56
Date:	17.8.23	Time – Before:	12.30
Undertaken By:	K.Taylor	Total Vol Removed:	1L
Pump Program No:		PID (ppm):	0.3

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
—	7.01	1L		19.2	7.5	669	7.95	-148.8
			Started sampling.					

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

Sampling Containers Used: 2x glass amber, 4x BTEX vials, 1 x HNO3 plastic, 0x H2SO4 plastic, 1 x unpreserved plastic

YSI used: 5

Tested By: Katrina Taylor	**Remarks:**
Date Tested: 17.8.23	- Steady state conditions
Checked By:	- difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Date:	

JKEnvironments

Client:	Health Infrastructure	**Job No.:**	E34300PT2
Project:	Proposed New Warrawong Community Health Centre	**Well No.:**	MW224
Location:	85-91 Cowper Street, Warrawong, NSW	**Depth (m):**	7.5M

WELL FINISH

X	**Gatic Cover**	**Standpipe**	**Other (describe)**

WELL PURGE DETAILS:

Method:	Peristaltic	**SWL – Before:**	6.47M
Date:	17.8.23	**Time – Before:**	12:00pm
Undertaken By:	K Taylor	**Total Vol Removed:**	1L
Pump Program No:		**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)
—	6.49	1L		20.3	3.7	1333	7.10	-178.4

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,** 0 **x H2SO4 plastic,** 1 **x unpreserved plastic**

YSI used: 5

Tested By: Katrina Taylor	**Remarks:**
Date Tested: 17.8.23	- Steady state conditions - difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Checked By:	
Date:	

JKEnvironments

PID FIELD CALIBRATION FORM

Client:	Health Infrastructure
Project:	Proposed New Warrawong Community Health Centre
Location:	85-91 Cowper Street, Warrawong, NSW
Job Number:	E34300PT2

PID

Make: Mini Rae	Model: PID-3	Unit: 8	Date of last factory calibration:
Date of calibration: 31/7/23		Name of Calibrator: CB	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: 100.3 ppm		Error in measured reading: ± 0.3 ppm	
Measured reading Acceptable (Yes/No):			

PID

Make: Rae	Model: MiniRae Lite	Unit: 4	Date of last factory calibration: 13.1.23
Date of calibration: 14.8.23		Name of Calibrator: KT	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: 100.3 ppm		Error in measured reading: ± 0.3 ppm	
Measured reading Acceptable (Yes/No): Yes			

PID

Make: Rae	Model: MiniRae Lite	Unit: 4	Date of last factory calibration: 13.1.23
Date of calibration: 17.8.23		Name of Calibrator: KT	
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):			

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	Health Infrastructure		
Project:	Proposed New Warrawong Community Health Centre		
Location:	85-91 Cowper Street, Warrawong, NSW		
Job Number:	E34300PT2		
DISSOLVED OXYGEN last			
Make: Hanna Instruments		Model: HI98194	
Date of calibration: 31/7/23		Name of Calibrator: CB	
Span value: 70% to 130%			
Measured value: 105.5			
Measured reading Acceptable (Yes/No):			
pH			
Make: Hanna Instruments		Model: HI98194	
Date of calibration: 31/7/23		Name of Calibrator: CB	
Buffer 1: Theoretical pH = 7.01± 0.01		Expiry date: 19/12/23	Lot No: DK100123
Buffer 2: Theoretical pH = 4.01± 0.01		Expiry date: 08/27	Lot No: 8014
Measured reading of Buffer 1: 6.96			
Measured reading of Buffer 2: 4.02			
Slope: /		Measured reading Acceptable (Yes/No):	
EC			
Make: Hanna Instruments		Model: HI98194	
Date: 31/7/23	Name of Calibrator: CB		Temperature: 20.75 °C
Calibration solution: AR-Conductivity Solution		Expiry date: 02/'25	Lot No: CJ210223
Theoretical conductivity at temperature (see solution container): 1.305 µS/cm			
Measured conductivity: 1.603 µS/cm		Measured reading Acceptable (Yes/No):	
REDOX			
Make: Hanna Instruments		Model: HI98194	
Date of calibration: 31/7/23		Name of Calibrator: CB	
Calibration solution: Hannah Instruments ORP		Expiry date: 8169	Lot No: 09/27
Theoretical redox value: 240mV			
Measured redox reading: 228.8 mV		Measured reading Acceptable (Yes/No):	

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	Health Infrastructure		
Project:	Proposed New Warrawong Community Health Centre		
Location:	85-91 Cowper Street, Warrawong, NSW		
Job Number:	E34300PT2		
DISSOLVED OXYGEN			
Make: YSI		Model: Professional Plus	
Date of calibration: 14.8.23		Name of Calibrator: KT	
Span value: 70% to 130%			
Measured value: 102%			
Measured reading Acceptable (Yes/No): Yes			
pH			
Make: YSI		Model: Professional Plus	
Date of calibration: 14.8.23		Name of Calibrator: KT	
Buffer 1: Theoretical pH = 7.01± 0.01		Expiry date: Dec/23	Lot No: DK00123
Buffer 2: Theoretical pH = 4.01± 0.01		Expiry date: May/24	Lot No: 398321
Measured reading of Buffer 1: 7.01			
Measured reading of Buffer 2: 3.96			
Slope: –		Measured reading Acceptable (Yes/No):	
EC			
Make: YSI		Model: Professional Plus	
Date: 14.8.23	Name of Calibrator: KT		Temperature: 21.7 °C
Calibration solution:		Expiry date: Sept/23	Lot No: 386922
Theoretical conductivity at temperature (see solution container): 1332 µS/cm			
Measured conductivity: 1218 µS/cm		Measured reading Acceptable (Yes/No):	
REDOX			
Make: YSI		Model: Professional Plus	
Date of calibration: 14.8.23		Name of Calibrator: KT	
Calibration solution: ORP Test Solution		Expiry date: Sept/27	Lot No: 8169
Theoretical redox value: 240mV			
Measured redox reading: 236.1 mV		Measured reading Acceptable (Yes/No):	

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	Health Infrastructure		
Project:	Proposed New Warrawong Community Health Centre		
Location:	85-91 Cowper Street, Warrawong, NSW		
Job Number:	E34300PT2		
DISSOLVED OXYGEN			
Make: YSI		Model:	
Date of calibration: 17.8.23		Name of Calibrator: KT	
Span value: 70% to 130%			
Measured value: 104.1			
Measured reading Acceptable (Yes/No): Yes			
pH			
Make: YSI		Model:	
Date of calibration: 17.8.23		Name of Calibrator: KT	
Buffer 1: Theoretical pH = 7.01± 0.01		Expiry date: Dec/23	Lot No: DK00123
Buffer 2: Theoretical pH = 4.01± 0.01		Expiry date: May/24	Lot No: 348326
Measured reading of Buffer 1: 7.09			
Measured reading of Buffer 2: 4.01			
Slope: —		Measured reading Acceptable (Yes/No):	
EC			
Make: YSI		Model:	
Date: 17.8.23	Name of Calibrator: KT		Temperature: 20.1 °C
Calibration solution: Conductivity standard.		Expiry date: Sept/23	Lot No: 326722
Theoretical conductivity at temperature (see solution container): 1035 µS/cm			
Measured conductivity: 1202 µS/cm		Measured reading Acceptable (Yes/No):	
REDOX			
Make: YSI		Model: Professional Plus.	
Date of calibration: 17.8.23		Name of Calibrator: KT	
Calibration solution: ORP Test Solutions		Expiry date: Sept/27	Lot No: 8169
Theoretical redox value: 240mV			
Measured redox reading: 256 mV		Measured reading Acceptable (Yes/No):	

Appendix H: 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

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