Detailed Site Investigation

1-5 Station Lane, Lochinvar NSW

NEW24P-0254AB
19 December 2024

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GEOTECHNICAL I LABORATORY I EARTHWORKS I QUARRY I CONSTRUCTION MATERIAL TESTING

Document control record

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Document Control					
Report Title		Detailed Site Investigation			
Document ID		NEW24P-0254-AB			
Project		Proposed Childcare Centre 1 to 5 Station Lane, Lochinvar NSW			
Rev	**Date**	**Revision details/status**	**Prepared by**	**Author**	**Reviewer**
0	19/12/2024	Original	Qualtest	L. Callinan	E. Coleman

Executive Summary

Qualtest Laboratory NSW Pty Ltd (Qualtest) has carried out a Detailed Site Investigation (DSI) on behalf of Boar Island Unit Trust, for the site located at 1 to 5 Station Lane, Lochinvar NSW (the Site).

The site covers an area of approximately 4,500m^2 and comprises Lot 1 to 3 DP516963. The site is currently zoned R1 General Residential and is proposed to be developed into a childcare centre.

Qualtest has carried out a Preliminary Site Investigation (PSI) for the site, ref: NEW24P-0254-AA dated 12 November 2024 (Qualtest, 2024). The PSI identified four AECs for the site, relating to: Current and former buildings on the site; Storage of vehicles, equipment, and waste materials; Imported Fill - Potential use of contaminated imported fill; and, Former agricultural use (grazing). Based on the above, it was recommended that a Detailed Site Investigation be carried out on the site.

The objectives of the DSI were to:

- Assess whether soil contamination is present; and,
- Provide recommendations on the need for further assessment, and remediation or management (if required).

In order to achieve the above objective, Qualtest carried out the following scope:

- Collection of soil samples from seven test pit locations from across the site and collection of twenty-seven surface soil samples;
- Laboratory analysis of soil samples from a suite of common contaminants; and,
- Data assessment and preparation of a Detailed Site Investigation Report.

The site history review showed that the site has been used for residential purposes from at least 1976 to the present day, and was likely vacant farming (grazing) land prior to 1976. Dwellings were constructed on Lots 1 and 2 between 1961 and 1976, and on Lot 3 between 1984 and 1991.

Four AEC's were identified for the site:

1. Current and former buildings on the site;
2. Storage of vehicles, equipment, and waste materials;
3. Imported Fill - Potential use of contaminated imported fill; and,
4. Former agricultural use (grazing).

To assess whether contamination was present, seven borehole locations and twenty-seven surface locations were sampled, targeting the identified AEC and providing a spread across the site.

The laboratory results showed concentrations of contaminants below the adopted criteria, with the exception of bonded ACM exceeding human health criteria in a surface sample, located on the north-western boundary of the site. The ACM was located on the site surface in an area where materials containing asbestos may have been stored historically, and where fill material is inferred to present, particularly in the location of underground services. Excavation in this area was not possible due to the presence of underground services.

The Conceptual Site Model (CSM) indicated that exposure pathways were complete for current and future site users, and construction/maintenance workers due to bonded ACM exceeding human health criteria in a surface sample on the north-western boundary of the site.

Based on the results of the Detailed Site Investigation it is considered the site can be made suitable for the proposed childcare centre, with the following recommendations:

- Preparation of a Remediation Action Plan (RAP) for the remediation of the ACM, and validation of the surrounding site surface and soils;
- Clearances are undertaken of the soils in the footprints of the site buildings post-demolition to check for ACM; and
- Preparation of an Unexpected Finds Procedure to manage potential unexpected finds of contamination during earthworks and construction for the proposed development.

Provided the recommendations made within this report are implemented, it is considered that the site could be rendered suitable, from a contamination point of view, for the proposed childcare centre.

This report was prepared in general accordance with the relevant sections of the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land and the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013, Canberra (referred to as ASC NEPM 2013). This report comprises a stage 2 detailed site investigation as described by State Environmental Planning Policy (Resilience and Hazards) 2021 Chapter 4.

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1.0 Introduction

Qualtest Laboratory NSW Pty Ltd (Qualtest) has carried out a Detailed Site Investigation (DSI) on behalf of Boar Island Unit Trust, for the site located at 1 to 5 Station Lane, Lochinvar NSW (the Site). The site location is shown on Figure 1, Appendix A.

The site covers an area of approximately 4,500m^2 and comprises Lot 1 to 3 DP516963. The site is currently zoned R1 General Residential and is proposed to be developed into a childcare centre.

Qualtest has carried out a Preliminary Site Investigation (PSI) for the site, ref: NEW24P-0254-AA dated 12 November 2024 (Qualtest, 2024). The PSI identified four AECs for the site, relating to: Current and former buildings on the site; Storage of vehicles, equipment, and waste materials; Imported Fill - Potential use of contaminated imported fill; and, Former agricultural use (grazing). Based on the above, it was recommended that a Detailed Site Investigation be carried out on the site.

This report was prepared in general accordance with the relevant sections of the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land and the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013, Canberra (referred to as ASC NEPM 2013). This report comprises a stage 2 detailed site investigation as described by State Environmental Planning Policy (Resilience and Hazards) 2021 Chapter 4.

1.1 Objectives

The objectives of the DSI were to:

- Assess whether soil contamination is present; and,
- Provide recommendations on the need for further assessment, and remediation or management (if required).

1.2 Scope of Works

In order to achieve the above objective, Qualtest carried out the following scope:

- Collection of soil samples from seven test pit locations from across the site and collection of twenty-seven surface soil samples;
- Laboratory analysis of soil samples from a suite of common contaminants; and,
- Data assessment and preparation of a Detailed Site Investigation Report.

2.0 Site Description

2.1 Site Identification

General site information is provided below in Table 2.1. The site location is shown in Figure 1, Appendix A.

Table 2.1: Summary of Site Details

Site Address:	1-5 Station Lane, Lochinvar NSW
Approximate site area and dimensions:	Approx. 4,500m^2 Approx. 55m long north to south by 95m wide east to west at its longest and widest points
Title Identification Details:	Lot 1 to 3 DP516963, within the Maitland local government area
Current Zoning	R1 General Residential
Current Ownership:	Lot 2 - Ricky James Meyn and Leza Mary McNab Lots 1 and 3 not known.
Previous and Current Landuse:	Rural Residential
Proposed Landuse:	Childcare Centre
Adjoining Site Uses:	North – Low density residential South – Low Density Residential East – Station Lane, low density residential West – Lochinvar Creek, rural residential
Site Coordinates for approximately middle of site:	32°41'57.69 S 151°27'15.03 E

2.2 Topography and Drainage

Reference to the NSW Land and Property Information Spatial Information Exchange website (https://six.nsw.gov.au/wps/portal/) indicated the elevation of the site was about 30m AHD.

During the site investigation the site was observed to slope down to the west into Lochinvar Creek located on the western boundary of the site.

The ground surface, excluding building areas, consisted of grass. Rain falling on the site would be expected to infiltrate into the site surface. Excess surface water was expected to follow the site topography, and flow into Lochinvar Creek, located on the western boundary of the site. Lochinvar Creek is anticipated to flow to the north of the site and discharge into the Hunter River located approximately 3km north of the site.

2.3 Regional Geology

Reference to the New South Wales surface geology map published on MinView (https://minview.geoscience.nsw.gov.au/) indicates the site to be generally underlain by Permian aged Lochinvar Formation, belonging to the Dalwood Group, comprising basalt, siltstone, sandstone.

2.4 Hydrogeology

Groundwater beneath the site is anticipated to be present in a semi-confined aquifer within residual soils and/or weathered rock. Groundwater is expected to be greater than 3m below ground surface (bgs). Groundwater flow direction is anticipated to flow north, eventually discharging into the Hunter River located approximately 3km north of the site.

It should be noted that groundwater conditions can vary due to rainfall and other influences including regional groundwater flow, temperature, permeability, recharge areas, surface condition, and subsoil drainage.

A search of the NSW Department of Primary Industries (Office of Water) registered groundwater bores located within a 500m radius of the site was undertaken. The search revealed that there was one bore located within this radius. A copy of the search was provided in the PSI (Qualtest, 2024), and is summarised below in Table 2.4.

Table 2.4 – Groundwater Bore Search

Bore ID	Installation Date	Purpose	Approx. Distance and Gradient from Site	Final Depth (m)	Water Bearing Zones (m)
GW060900	01/03/1985	Domestic Stock, Monitoring Bore	400m to the north-east, cross gradient	18.30	-

2.5 Acid Sulfate Soils

Reference to the Acid Sulfate Soil online database from State of NSW and Department of Planning, Industry and Environment, 2021 (https://espade.environment.nsw.gov.au) the site is located within an area of "no known occurrence" of acid sulfate soils (ASS).

3.0 Summary of Previous Assessments

Qualtest carried out a Preliminary Site Investigation for the site in November 2024 A summary of the report is presented below.

The objectives of the PSI were to:

- Provide an assessment of the likelihood for contamination to be present on the site from past uses and activities;
- Identify Areas of Environmental Concern (AECs) and associated Contaminants of Potential Concern (COPC), if any; and,
- Provide recommendations on the need for further assessment, and remediation or management (if required).

In order to achieve the above objective, Qualtest carried out the following scope:

- Desktop study and site history review;
- Site walkover; and,
- Preparation of a Preliminary Site Investigation Report.

The site history review showed that the site has been used for residential purposes from at least 1976 to the present day, and was likely vacant farming (grazing) land prior to 1976. Dwellings were constructed on Lots 1 and 2 between 1961 and 1976, and on Lot 3 between 1984 and 1991.

Four AEC's were identified for the site:

5. Current and former buildings on the site;
6. Storage of vehicles, equipment, and waste materials;
7. Imported Fill - Potential use of contaminated imported fill; and,
8. Former agricultural use (grazing).

The Preliminary Conceptual Site Model (CSM) indicated that exposure pathways were potentially complete for current and future site users, construction/maintenance workers and/or ecological receptors.

Based on the above, it is recommended that a Detailed Site Investigation, comprising intrusive investigations, be carried out on the site.

4.0 Preliminary Conceptual Site Model

Based on the results of the preliminary site investigation carried out on the site (Qualtest, 2024), a preliminary Conceptual Site Model (CSM) has been developed.

Table 4.1 – Preliminary Conceptual Site Model

AEC	COPC	Likelihood of Contamination	Mechanism of Contamination	Potentially Affected Media	Human & Ecological Receptors	Potential mechanisms of exposure	Potential & Complete Exposure Pathways	Comments
1. Current and former buildings on the site: • Weathering of potentially hazardous materials (asbestos, lead paint, galvanised metals). • Use of pesticides around building. • Demolition of structures over time.	Metals, Asbestos, OCPs	Low to medium	Top-down leaks/spills, flakes/fibres to soil. Leaching of soil contaminants to surface water and groundwater	• Surface soils • Surface water • Groundwater • Aesthetics	• Current site visitors • Future construction workers & site users • Soil biota/plants and transitory wildlife • Offsite surface water – Lochinvar Creek (located adjacent to the western boundary of the site) flowing offsite to the north • Offsite groundwater discharge point – Hunter River located approximately 3.5km north of the site	• Direct dermal contact with contaminated soil • Ingestion of contaminated soil • Inhalation of asbestos fibres, or contaminated soil (as dust) • Leaching of soil contaminants to surface water and/or groundwater. • Surface water discharge to Lochinvar Creek located adjacent to the western boundary of the site • Groundwater discharge to Hunter River, located 3km to the north of the site.	• Potentially complete exposure pathway for current site visitors, future construction workers and site users. • Potentially complete exposure pathway for soil biota/plants and transitory wildlife, and surface water. • Likely Incomplete exposure pathway to groundwater due to depth of groundwater (>3m), clay subsoils and top-down nature of potential contamination.	• Exposure pathway would be incomplete if sampling and analysis does not identify contamination.
2. Storage of vehicles, equipment and materials:	TRH, BTEX, PAH, Metals, Asbestos, OCPs (CoPCs dependent on material/waste type)	Low to medium	Top-down leaks/spills, flakes/fibres to soil. Leaching of soil contaminants to surface water and groundwater.	• Surface soils • Surface water • Groundwater • Aesthetics	• Current site visitors • Future construction workers & site users • Soil biota/plants and transitory wildlife • Offsite surface water – Lochinvar Creek (located adjacent to the western boundary of the site) flowing offsite to the north • Offsite groundwater discharge point – Hunter River located approximately 3.5km north of the site	• Direct dermal contact with contaminated soil • Ingestion of contaminated soil • Inhalation of asbestos fibres, or contaminated soil (as dust) • Inhalation of petroleum hydrocarbon vapours • Leaching of soil contaminants to	• Potentially complete exposure pathway for current site visitors, future construction workers and site users. • Potentially complete exposure pathway for soil biota/plants and transitory wildlife, and surface water. • Likely Incomplete exposure pathway to groundwater due to depth of groundwater (>3m), clay subsoils and	• Exposure pathway would be incomplete if sampling and analysis does not identify contamination.

AEC	COPC	Likelihood of Contamination	Mechanism of Contamination	Potentially Affected Media	Human & Ecological Receptors	Potential mechanisms of exposure	Potential & Complete Exposure Pathways	Comments
3. Filling on the site	TRH, BTEX, PAH, OCPs, Metals, Asbestos, pH and CEC	Low to medium	Potential use of imported fill of unknown quality and origin.	• Fill Soils • Groundwater • Surface Soils • Surface water • Underlying soils	• Current site visitors • Future construction workers & site users • Soil biota/plants and transitory wildlife • Offsite surface water – Lochinvar Creek (located adjacent to the western boundary of the site) flowing offsite to the north • Offsite groundwater discharge point – Hunter River located approximately 3.5km north of the site	surface water and/or groundwater • Surface water discharge to Lochinvar Creek located adjacent to the western boundary of the site • Groundwater discharge to Hunter River, located 3km to the north of the site.	top-down nature of potential contamination.	
4. Former agricultural use (grazing land) • Potential use of pesticides.	OCPs, Metals	Low	Potential application of pesticides on surface soils.	• Surface Soils • Groundwater • Surface water	• Current site visitors • Future construction workers & site users • Soil biota/plants and transitory wildlife • Offsite surface water – Lochinvar Creek (located adjacent to the western boundary of the site) flowing offsite to the north. • Offsite groundwater discharge point – Hunter River located approximately 3.5km north of the site	• Direct dermal contact with contaminated soil • Ingestion of contaminated soil • Leaching of soil contaminants to surface water and/or groundwater • Surface water discharge to Lochinvar Creek located adjacent to the western boundary of the site • Groundwater discharge to Hunter River, located 3km to the north of the site.	• Potentially complete exposure pathway for current site visitors, future construction workers and site users. • Potentially complete exposure pathway for soil biota/plants and transitory wildlife, and surface water. • Likely Incomplete exposure pathway to groundwater due to depth of groundwater (>3m), clay subsoils and top-down nature of potential contamination.	• Exposure pathway would be incomplete if sampling and analysis does not identify contamination.

5.0 Data Quality Objectives

5.1 Step 1 – State the Problem

The site has historically been used for residential and potentially farming purposes, and there is a potential for contamination of soil to exist from past site uses. Four AECs were identified for the site, as described in Table 4.1, above. If contamination exists, the site may not be suitable for the proposed use without remediation.

5.2 Step 2 – Identify the Decision/Goal of the Study

The decisions to be made based on the contamination assessment are:

- Is the site characterisation sufficient to provide adequate confidence to make decisions regarding remediation and or management?
- Are the concentrations of COPCs above the adopted landuse criteria?
- Do potential risks associated with contamination exist, and if so, what are they?
- Will the site require remediation, and if so, what level and type of remediation will be required to make the site suitable for the proposed land use, from a contamination perspective?

5.3 Step 3 – Identify Information Inputs

Inputs into the decision are:

- Have samples been collected in the required areas of the site (the identified AECs)?
- Have samples been collected at the required frequencies and adequately represent the conditions on site?
- Is the data set adequate to perform statistical analysis, if required (i.e. calculate 95% UCL)?
- Have the samples been analysed for the COPCs identified?
- Have concentrations exceeding the adopted criteria been reported in the samples?
- If concentrations exceeding adopted criteria have been reported, will these areas require remediation and/or management?

The informational inputs into the decision are:

- Field observations and field screening results;
- Laboratory results (concentrations of contaminants in soil);
- QA/QC documentation and data;
- Adopted assessment criteria (see Section 7); and,
- Relevant NSW EPA endorsed Guidelines.

The media to be sampled and analysed is:

- Soil.

5.4 Step 4 – Define the Boundaries of the Study

The study boundary is defined laterally as the site boundary, Lot 1 to 3 DP516963, within the Maitland local government area. The site is located at 1 to 5 Station Lane, Lochinvar NSW and covers an area of approximately 4,500m^2 (refer to Figure 1 and 2, Appendix A). Vertically, the study boundary will be defined by the depth of soil contamination. It is anticipated the vertical boundary would be a maximum of 1.5m bgs. Temporally, the study boundary is the date of sampling.

5.5 Step 5 – Develop an Analytical (Statistical) Approach

The analytical approach can be defined as: -

- If the laboratory quality assurance/ quality control data are within the acceptable ranges, the data will be considered suitable for use;
- If the COPCs are reported above the adopted criteria and/or at elevated levels (where no criteria are available) then it will be considered whether further assessment, remediation and/or management measures are required;
- Where practical and/or appropriate, the 95% Upper Confidence Limit (UCL) of the validation samples will be calculated. If the 95% UCL is above the adopted criteria, then it will be considered whether further assessment, remediation and/or management measures are required; and,
- Where concentrations are below the assessment criteria, then no further assessment, remediation and/or management of that contaminant, in that area, in that media, is required. This is provided samples have been collected at the required frequencies (as per NSW EPA guidelines) and adequately represent the conditions on site, if not, additional sampling may be required.

5.6 Step 6 – Specify Performance or Acceptance Criteria

There are two types of errors:

- Type 1 – finding that the site is contaminated, when it is not;
- Type 2 – finding that the site is uncontaminated, when it is.

To reduce the potential for errors, the following will be applied:

- Appropriate field sampling methodologies and collection of field data (including sampling frequency);
- Robust QA/QC assessment of field procedures and laboratory data;
- Appropriate sampling and analytical density;
- Use of statistics (i.e. 95% UCL) to assess arithmetic average of COPCs. Use of statistics will also take into account:
  - No sample should report a concentration more than 250% of the adopted criteria; and,
  - The standard deviation of a sample population should not exceed 50% of the adopted criteria.

The adopted criteria are shown in Section 7 below.

5.7 Step 7 – Develop the Plan for Obtaining Data

The methodologies presented in this report are designed to meet the nominated DQOs. Optimisation of the data collection process will be achieved by:

- Working closely with the analytical laboratories and sampling equipment suppliers so that appropriate procedures and processes are developed and implemented prior to and during the field work and that sampling, handling, and transport to, and processing by, the analytical laboratories is appropriate.
- Conduct sampling in accordance with industry best practice and Standard Operating Procedures (SOPs) for the type of sampling being conducted.

6.0 Field and Laboratory Investigations

6.1 Sampling Plan

The site is about 4,500m^2 in area. The NSW EPA (2022) Sampling Design Part 1 – Application, Contaminated Land Guidelines recommends a minimum of 12 sampling locations to characterise a site of 4,500m^2. As the site contained multiple buildings, vehicles, waste/equipment and evidence of filling over three separate allotments an increased sampling density of 34 sampling locations has been adopted for the site.

Based on the site history assessment, four AECs were identified. To provide an assessment of the AECs identified, and an assessment of potential soil contamination across the site, judgemental sampling was considered appropriate.

Sampling locations were selected based on the site history, the AECs identified for the site, and providing representative sampling across the site.

Table 6.1 summarises the sampling locations with reference to the AECs, and the laboratory analysis. The sampling locations are shown on Figure 4, Appendix A.

Table 6.1 – Summary of Sampling Locations and Laboratory Analysis

AEC	Potential COCs	Samples Collected	COCs analysed
1. Current and former buildings on the site:	Metals, Asbestos, OCPs	SS1-1 to SS1-4, SS1-8, SS1-9, BH01, SS2-1 to SS2-4, SS2-6 to SS2-8, SS3-3 to SS3-6	Metals, Asbestos, OCPs, TRH, BTEX, PAH
2. Storage of vehicles, equipment and materials	TRH, BTEX, PAH, Metals, Asbestos, OCPs (CoPCs dependent on material/waste type)	SS1-3, SS1-5 to SS1-7, SS1-10, SS1-11, SS2-5, SS2-9, BH04, SS3-2	Metals, Asbestos, TRH, BTEX, PAH (CoPCs dependent on material/waste type)
3. Filling on the site	TRH, BTEX, PAH, OCPs, Metals, Asbestos	BH02, SS1-11, BH03, BH05, SS3-1, BH06, BH07, ASB1	TRH, BTEX, PAH, OCPs, Metals, Asbestos

AEC	Potential COCs	Samples Collected	COCs analysed
4. Former agricultural use (grazing land)	OCPs, Metals	SS1-1 to SS1-11, SS2-1 to SS2-9, SS3-1 to SS3-, BH01 to BH07	Metals, OCPs

Notes: Some boreholes/surface samples were used to assess multiple AECs.
TP = test pit, SS = surface sample, Metals = arsenic, cadmium, chromium, copper, lead, nickel, zinc, mercury, and molybdenum; TRH = total recoverable hydrocarbons; BTEX = benzene, toluene, ethylbenzene, xylenes; PAH = polycyclic aromatic hydrocarbons.

6.2 Soil Sampling

The boreholes were drilled using a 2.7t excavator with a 300mm auger attachment. The boreholes were excavated at least 0.5m into natural material or a maximum of 2.3m bgs. Soil samples were collected from the boreholes in the topsoil and fill (where present) materials and underlying natural materials. The samples were collected directly from the auger, using a clean pair of nitrile gloves.

The surface soil samples were collected with the assistance of the excavator equipped with a 450mm bucket. Surface soil samples were collected from 0.0-0.1m.

Each surface sample and fill material samples were assessed for asbestos onsite using the gravimetric method, comprising of collection of a 10L sample, screening through a 6.7mm sieve, and weighing of potential ACM fragments retained on the sieve (if any). The results of the gravimetric testing are shown in Table 3, Appendix B, and discussed in Section 9.2.

The soil samples were placed into laboratory supplied glass jars and plastic zip-lock bags. Each soil sample was placed directly into an ice-chilled esky and remained chilled during fieldwork and transportation to the laboratory.

6.3 Laboratory Analysis

The samples were dispatched to the NATA-accredited Eurofins laboratory under chain of custody conditions. Soil samples were selected for analysis based on field observations, and providing a spread across the site. The soil samples were analysed for the following:

Twenty-two soil samples were selected for analysis as part of this PDSI based on field observations. The soil samples were analysed for the following:

- Total Recoverable Hydrocarbons (TRH) – 13 primary samples;
- Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) – 13 primary samples;
- Polycyclic Aromatic Hydrocarbons (PAHs) – 13 primary samples;
- Metals (arsenic, cadmium, chromium, copper, lead, nickel, zinc and mercury) – 25 primary samples;
- OCP's – 5 primary samples;
- pH and Cation Exchange Capacity (CEC) – 1 primary samples;
- Asbestos (NEPM %w/w) – 15 primary soil samples; and
- Asbestos (ID) – 1 primary sample.

7.0 Investigation Criteria

7.1 Health and Ecological Investigation and Screening Levels

The health and ecological investigation levels for soil, presented in the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013*, Canberra (referred to as ASC NEPM 2013) are generally used in NSW when selecting investigation levels for chemical contaminants in soil.

The purpose of the ASC NEPM (2013) is to '*establish a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, environmental auditors, landowners, developers and industry*'.

ASC NEPM (2013) provides health and ecological investigation and screening levels for different exposure scenarios based on a proposed land use. Health and ecological investigation and screening levels are applicable to the first stage (Tier 1) of site assessment and are used to assist in the iterative development of a Conceptual Site Model (CSM). They are adopted as concentrations of a contaminant above which either further appropriate investigation and/or evaluation will be required, or development of an appropriate management strategy (including remediation).

Health Investigation Levels (HILs) and Health Screening levels (HSLs) are applicable for assessing human health risk via relevant exposure pathways.

The HILs were developed for a broad range of metals and organic substances. These are generic to all soil types.

The HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via inhalation and direct contact with soil and groundwater. The HSLs depend on specific soil physicochemical properties, building configurations, land use scenarios and the depth that groundwater is encountered.

Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) are applicable for assessing risk to terrestrial ecosystems under residential, open space and commercial/industrial land use scenarios. They apply to the top 2m of soil, which corresponds to the root zone and habitation zone of many species.

The EILs are associated with selected metals and organic compounds. The EILs are site specific and are determined by calculating an Ambient Background Concentration (ABC) and an Added Contaminant Limit (ACL) for the site, which are added together to get the EIL. The EIL's for the site have been calculated using an ABC and site specific pH, Cation Exchange Capacity (CEC) and clay content values. The ABC were obtained from Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (Olszowy et al, 1995) - old suburbs, high traffic, 25 percentile.

The ESLs are associated with petroleum compounds and fractions and are dependent on specific soil physical properties (i.e. coarse and fine-grained soil).

Based on the proposed site use the investigation and screening levels for residential land use have been adopted (HIL A, EIL A, HSL A, and ESL A), and are shown in Table 7.3 below.

7.2 Asbestos Materials in Soil

The assessment of known and suspected asbestos contamination in soil is based on:

- *ASC NEPM (2013)*; and
- *WA DoH (2009) Guidelines of the assessment and management of asbestos contaminated sites in Western Australia, WA Department of Health and Department of Environment and Conservation.*

Schedule B1, Section 4 ASC NEPM (2013) provides guidance on the assessment of both friable and non-friable forms of asbestos in soil. This guidance is based on the WA DoH (2009) Guidelines that presented risk based screening levels for asbestos in soil under various landuse scenarios.

For the purpose of assessing asbestos impacts in soil, three groups are recognised:

- *Asbestos Containing Material (ACM) - which is in sound condition although possibly broken or fragmented and the asbestos is bound in a matrix. This is restricted to material that cannot pass through a 7mm x 7mm sieve;*
- *Fibrous asbestos (FA) - friable asbestos material, such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products;*
- *Asbestos fines (AF) - includes free fibres of asbestos, small fibre bundles and also ACM fragments that pass through a 7mm x 7mm sieve.*

The health screening levels for asbestos in soil for residential land use have been adopted and are shown in Table 7.3 below.

7.3 Adopted Soil Investigation Criteria

The adopted soil criteria are presented in Table 7.3 below.

Table 7.3 – Adopted Soil Criteria

Contaminant	**HIL / HSL^ A (mg/kg)[1,2]**	**EIL / ESL A[3]**
Arsenic	100	100
Cadmium	20	-
Chromium VI	100	-
Chromium III	-	690*
Copper	6,000	250*
Lead	300	1,100
Nickel	400	380*
Zinc	7,400	490*
Mercury	40	-
Benzene	0.7	65

Contaminant	**HIL / HSL^ A (mg/kg)[1,2]**	**EIL / ESL A[3]**
Toluene	480	105
Ethylbenzene	NL	125
Xylenes	110	45
Naphthalene	5	170
TRH C6-C10	-	180
TRH C6-C10 minus BTEX	50	-
TRH >C10-C16	-	120
TRH >C10-C16 minus naphthalene	280	-
TRH >C16-C34	NL	1,300
TRH >C34-C40	NL	5,600
Benzo(a)pyrene	-	0.7
Benzo(a)pyrene TEQ	3	-
Total PAHs	300	-
DDD+DDT+DDE	240	180
Aldrin & dieldrin	6	-
Chlordane	50	-
Endosulfan	270	-
Endrin	10	-
Heptachlor	6	-
Hexachlorobenzene	10	-
Methoxychlor	300	-
Toxaphene	20	-
Asbestos	Detected	-
Bonded ACM %	0.01%	-
FA and AF %	0.001%	-

Contaminant	HIL / HSL^ A (mg/kg)[1,2]	EIL / ESL A[3]
All forms of asbestos	No visible evidence for surface soil (top 10cm)	-

Notes:
^ Based on an average pH of 7.6, a CEC of 33meq/100g, and Clay content 50%, and using Ambient Background Concentration obtained from Olszowy et al (1995) using urban soils, old suburbs with high traffic,25% percentile.
1 – ASC NEPM (2013) - Health Investigation Levels- HIL A
2 - ASC NEPM - Soil Health Screening Levels for Vapour Intrusion, Residential, Clay 0m to <1m
3 - ASC NEPM (2013) - Ecological Investigation and Screening Levels, Urban Residential/Public Open Space, Fine textured

8.0 Quality Assurance/Quality Control

Sampling activities were undertaken in accordance with normal, industry accepted practices and standards. The assessment of field and laboratory quality assurance / quality control (QA / QC) procedures is provided below, and a data validation report is presented in Appendix D.

In order to assess field quality assurance / quality control (QA/QC) procedures, the following quality control samples were collected and analysed:

QC Sample	Type	Lab	Analysis
D1.2.12.24	Duplicate of SS1-1	Eurofins	Metals, TRH, BTEX, PAHs

Primary and intra lab duplicate samples were analysed by the NATA-accredited Eurofins laboratory.

Table 4, Appendix B, presents the relative percentage differences (RPDs) between the primary and duplicate samples. A review of the Qualtest QA / QC results indicates that RPDs were within the acceptable range (30%). It is noted that low concentrations can exaggerate the percentage differences with respect to small total concentrations, therefore where results for primary and duplicate sample were less than 10 time the LOR, the RPDs have been disregarded.

The laboratory internal QA/QC reports indicated that the appropriate laboratory QA / QC procedures and rates were undertaken for contamination studies, and that:

- Laboratory blank samples were free of contamination;
- Matrix spike recoveries were within the laboratory control limits;
- Laboratory duplicate RPDs were recorded within the control limits, with exception of lead and zinc the lab quoted a Q02 '*The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause*'. Based on this the usability of the data has not been impacted. For a mercury RPD the lab also quoted code Q15 which states '*The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.*'; and
- Surrogates and laboratory control samples were within the laboratories acceptable range

Based on the above, and the data validation report in Appendix D, it is considered that the field and laboratory methods for soil sampling are appropriate and that the data obtained is usable and considered to reasonably represent the concentrations at the sampling points at the time of sampling.

9.0 Results

9.1 Subsurface Conditions

The soils observed during boreholes are summarised below in Tables 9.1 and 9.2. The borehole logs are presented in Appendix C. The below summary covers the subsurface conditions observed in excavation works carried out across the site.

Table 9.1 – Summary of Soil Units and Types

Unit	Soil Type	Description
1A	FILL – TOPSOIL	Sandy CLAY / Clayey SAND – low to medium plasticity (generally low plasticity), dark brown, fine to coarse grained (mostly fine to medium grained) sand, root affected.
1B	FILL – OTHER	Clayey SAND / SAND – fine to medium grained, brown, fines of low plasticity, trace fine to medium grained angular gravel. Silty Gravelly SAND – fine to coarse grained, dark grey, fine to medium grained angular gravel, fines of low plasticity. Trace pockets of Sandy CLAY, with some coal and slag inclusions. Sandy CLAY / Gravelly Sandy CLAY / CLAY – medium to high plasticity, dark brown with some pale orange-brown to brown, fine to coarse grained (mostly fine to medium grained) sand, with some fine to medium grained angular gravel in places, trace rootlets in places. GRAVEL – medium grained, angular, pale orange-brown and grey.
2	TOPSOIL	Sandy CLAY – low to medium plasticity, dark brown, fine to medium grained (mostly fine grained) sand, root affected.
3	ALLUVIUM	CLAY – high plasticity, grey with some pale brown, with some fine to coarse grained (mostly fine to medium grained) sand.
4	RESIDUAL SOIL	Sandy CLAY – medium to high plasticity, mixtures of pale brown to dark brown, pale orange-brown to orange-brown, and pale grey-brown, fine to coarse grained (mostly fine to medium grained) sand, trace fine grained sub-angular to sub-rounded gravel. Pockets / Lenses / Bands of Extremely to Highly Weathered rock in places.
5	EXTREMELY WEATHERED ROCK (with soil properties)	Andesite; breaks down into Gravelly Sandy CLAY – medium plasticity, brown, fine to coarse grained sand, fine to medium grained angular to sub-angular gravel.
6	HIGHLY WEATHERED ROCK	ANDESITE – fine to coarse grained, brown, estimated extremely low to very low strength. SANDSTONE – fine to medium grained, red-brown, estimated very low to medium strength.

Table 9.2 – Summary of Soil Units Encountered at Test Locations

Location	Unit 1A FILL - TOPSOIL	Unit 1B FILL – OTHER	Unit 2 TOPSOIL	Unit 3 ALLUVIUM	Unit 4 RESIDUAL SOIL	Unit 5 EXTREMELY WEATHERED ROCK (with soil properties)	Unit 6 HIGHLY WEATHERED ROCK
	Depth in metres (m)						
BH01	0.00 – 0.30	0.30 – 1.15	-	1.15 – 2.10	2.10 – 2.30	-	-
BH02	0.00 – 0.05	0.05 – 0.80	-	0.80 – 1.10	1.10 – 2.30	-	-
BH03	0.00 – 0.05	0.05 – 0.40	-	-	0.40 – 1.80	1.80 – 1.90	1.90 – 2.30
BH04	-	-	0.00 – 0.10	-	0.10 – 0.85	0.85 – 2.00	2.00 – 2.30
BH05	-	-	0.00 – 0.10	-	0.10 – 2.30	-	-
BH06	0.00 – 0.15	0.15 – 0.40#	-	-	-	-	-
BH07	-	0.00 – 0.50	-	-	0.50 – 2.30	-	-

*End of borehole

Groundwater inflows were not observed during drilling.

9.2 Laboratory Results

Soil analytical results for the contamination assessment are summarised in Table 1 to 3, Appendix B. The laboratory analytical reports are also included in Appendix E.

The soil laboratory results were compared to the investigation levels described in Section 7. The analytical results indicated that concentrations of contaminants were reported below the adopted criteria, with the exception of:

- Concentration of chromium exceeded the HIL criteria (100mg/kg) in sample SS2-7 (110mg/kg);
- Concentrations of lead exceeded the HIL criteria (300mg/kg) in sample SS2-7 (520mg/kg), and SS2-9 (310mg/kg); and
- Bonded ACM exceeded the adopted HSL (0.01%) in sample SS1-11 (0.07%).

95% Upper Confidence Limit Calculations

For concentrations of chromium and lead exceeding the adopted investigation level, the 95% Upper Confidence Limits (UCLs) of the average concentrations for surface sample results was calculated. Calculations used ProUCL in accordance with the procedures discussed in ASC NEPM (2013) Schedule B2 Section 13.

NEPM (2013) Schedule B1, Section 3.2.1 states that:

- *"At the very least, the maximum and 95%UCL of the arithmetic mean contaminant concentration should be compared to the relevant Tier 1 screening criteria"*
- *"The implications of localised elevated values (hotspots) should also be considered. The results should also meet the following criteria:*
    - *The standard deviation of the results should be less than 50% of the relevant investigation or screening level, and*
    - *No single value should exceed 250% of the relevant investigation or screening level."*

Calculation sheets for data statistics, including average, standard deviation and 95%UCL of the average, are attached in Appendix G. ProUCL calculates the UCL comparing a number of different methods, including normal distribution, lognormal distribution, gamma distribution and nonparametric. ProUCL then recommends an appropriate method for the data set.

Due to the sites size and similarity in surface soils observed, all surface samples from the site were included in the UCL calculation.

The 95% UCL calculations are attached in Appendix B and showed:

Parameter	**Chromium - HIL**	**Lead - HIL**
No. of samples	24	24
Average	46.5	111.5
Standard Deviation	19.81 (20%)	110.5 (37%)
95% UCL	53.43	156.4
HIL (mg/kg)	**100 HIL**	**300 HIL**

10.0 Conceptual Site Model

Based on the results of the detailed site investigation carried out on the site, the Conceptual Site Model (CSM) has been updated.

Table 10.0 – Conceptual Site Model

AEC	COPC	Mechanism of Contamination	Potentially Affected Media	Human & Ecological Receptors	Potential mechanisms of exposure	Sampling Locations	Potential & Complete Exposure Pathways
1. Current and former buildings on the site: • Weathering of potentially hazardous materials (asbestos, lead paint, galvanised metals). • Use of pesticides around building. • Demolition of structures over time.	Metals, Asbestos, OCPs	Top-down leaks/spills, flakes/fibres to soil. Leaching of soil contaminants to surface water and groundwater	• Surface soils • Surface water • Groundwater • Aesthetics	• Current site visitors • Future construction workers & site users • Soil biota/plants and transitory wildlife • Offsite surface water – Lochinvar Creek (located adjacent to the western boundary of the site) flowing offsite to the north • Offsite groundwater discharge point – Hunter River located approximately 3.5km north of the site	• Direct dermal contact with contaminated soil • Ingestion of contaminated soil • Inhalation of asbestos fibres, or contaminated soil (as dust) • Leaching of soil contaminants to surface water and/or groundwater. • Surface water discharge to Lochinvar Creek located adjacent to the western boundary of the site • Groundwater discharge to Hunter River, located 3km to the north of the site.	SS1-1 to SS1-4, SS1-8, SS1-9, BH01, SS2-1 to SS2-4, SS2-6 to SS2-8, SS3-3 to SS3-6	• Incomplete exposure pathway for current site visitors, future construction workers, site users, and ecological receptors, as no contamination identified. • Incomplete exposure pathway for soil contaminants to leach to surface water, as no contamination identified in soil. • Incomplete exposure pathway to groundwater due to depth of groundwater (>3m), clay subsoils and no contamination identified.
2. Storage of vehicles, equipment and materials:	TRH, BTEX, PAH, Metals, Asbestos, OCPs (CoPCs dependent on material/waste type)	Top-down leaks/spills, flakes/fibres to soil. Leaching of soil contaminants to surface water and groundwater.	• Surface soils • Surface water • Groundwater • Aesthetics	• Current site visitors • Future construction workers & site users • Soil biota/plants and transitory wildlife • Offsite surface water – Lochinvar Creek (located adjacent to the western boundary of the site) flowing offsite to the north • Offsite groundwater discharge point – Hunter River located approximately 3.5km north of the site	• Direct dermal contact with contaminated soil • Ingestion of contaminated soil • Inhalation of asbestos fibres, or contaminated soil (as dust) • Inhalation of petroleum hydrocarbon vapours • Leaching of soil contaminants to surface water and/or groundwater • Surface water discharge to Lochinvar Creek located adjacent to the western boundary of the site • Groundwater discharge to Hunter River, located 3km to the north of the site.	SS1-3, SS1-5 to SS1-7, SS1-10, SS1-11, SS2-5, SS2-9, BH04, SS3-2	• Complete exposure pathway for current site visitors, future construction workers, site users as bonded ACM contamination identified in SS1-11 exceeding adopted criteria. • Incomplete exposure pathway for ecological receptors, as no contamination identified. • Incomplete exposure pathway for soil contaminants to leach to surface water, as no contamination identified in soil. • Incomplete exposure pathway to groundwater due to depth of groundwater (>3m), clay subsoils and no contamination identified.
3. Filling on the site	TRH, BTEX, PAH, OCPs, Metals, Asbestos, pH and CEC	Potential use of imported fill of unknown quality and origin.	• Fill Soils • Groundwater • Surface Soils • Surface water • Underlying soils			BH02, SS1-11, BH03, BH05, SS3-1, BH06, BH07, ASB1	

AEC	COPC	Mechanism of Contamination	Potentially Affected Media	Human & Ecological Receptors	Potential mechanisms of exposure	Sampling Locations	Potential & Complete Exposure Pathways
4. Former agricultural use (grazing land) Potential use of pesticides.	OCPs, Metals	Potential application of pesticides on surface soils.	• Surface Soils • Groundwater • Surface water	• Current site visitors • Future construction workers & site users • Soil biota/plants and transitory wildlife • Offsite surface water – Lochinvar Creek (located adjacent to the western boundary of the site) flowing offsite to the north. • Offsite groundwater discharge point – Hunter River located approximately 3.5km north of the site	• Direct dermal contact with contaminated soil • Ingestion of contaminated soil • Leaching of soil contaminants to surface water and/or groundwater • Surface water discharge to Lochinvar Creek located adjacent to the western boundary of the site • Groundwater discharge to Hunter River, located 3km to the north of the site.	SS3-7	• Incomplete exposure pathway for current site visitors, future construction workers, site users, and ecological receptors, as no contamination identified. • Incomplete exposure pathway for soil contaminants to leach to surface water, as no contamination identified in soil. • Incomplete exposure pathway to groundwater due to depth of groundwater (>3m), clay subsoils and no contamination identified.

11.0 Conclusions and Recommendations

The site history review showed that the site has been used for residential purposes from at least 1976 to the present day, and was likely vacant farming (grazing) land prior to 1976. Dwellings were constructed on Lots 1 and 2 between 1961 and 1976, and on Lot 3 between 1984 and 1991.

Four AEC's were identified for the site:

1. Current and former buildings on the site;
2. Storage of vehicles, equipment, and waste materials;
3. Imported Fill - Potential use of contaminated imported fill; and,
4. Former agricultural use (grazing).

To assess whether contamination was present, seven borehole locations and twenty-seven surface locations were sampled, targeting the identified AEC and providing a spread across the site.

The laboratory results showed concentrations of contaminants below the adopted criteria, with the exception of bonded ACM exceeding human health criteria in surface sample SS1-11. The ACM was located on the site surface in an area where materials containing asbestos may have been stored historically, and where fill material is inferred to present, particularly in the location of underground services. Excavation in this area was not possible due to the presence of underground services.

The Conceptual Site Model (CSM) indicated that exposure pathways were complete for current and future site users, and construction/maintenance workers due to bonded ACM exceeding human health criteria in surface sample SS1-11.

Based on the results of the Detailed Site Investigation it is considered the site can be made suitable for the proposed childcare centre, with the following recommendations:

- Preparation of a Remediation Action Plan (RAP) for the remediation of the ACM, and validation of the surrounding site surface and soils;
- Clearances are undertaken of the soils in the footprints of the site buildings post-demolition to check for ACM; and
- Preparation of an Unexpected Finds Procedure to manage potential unexpected finds of contamination during earthworks and construction for the proposed development.

Provided the recommendations made within this report are implemented, it is considered that the site could be rendered suitable, from a contamination point of view, for the proposed childcare centre.

This report was prepared in general accordance with the relevant sections of the NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land and the National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013, Canberra (referred to as ASC NEPM 2013). This report comprises a stage 2 detailed site investigation as described by State Environmental Planning Policy (Resilience and Hazards) 2021 Chapter 4.

12.0 Limitations

This report has been prepared by Qualtest for Boar Island Unit Trust based on the objectives and scope of work listed in Sections 1.1 and 1.2. No warranty, expressed or implied, is made as to the information and professional advice included in this report. Anyone using this document

does so at their own risk and should satisfy themselves concerning its applicability and, where necessary, should seek expert advice in relation to their particular situation.

The opinions, conclusions and recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. Qualtest has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

In preparing this report Qualtest has relied on information contained in searches of government websites and has not independently verified or checked the data contained on these websites.

In preparing this report, current guidelines for assessment and management of contaminated land were followed.

Site conditions may change after the date of this Report. Qualtest does not accept responsibility arising from, or in connection with, any change to the site conditions.

13.0 References

NSW Department of Primary Industries (Office of Water) Registered Groundwater Bore Map, accessed from http://allwaterdata.water.nsw.gov.au/water.stm.

NSW Land and Property Information, Spatial Information eXchange (SIX) Maps - Topographic Map, accessed from https://maps.six.nsw.gov.au/.

State of NSW and Department of Planning, Industry and Environment Acid Sulfate Soil online database, accessed from https://www.environment.nsw.gov.au/eSpade2Webapp

NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Land.

NSW EPA (2022) Sampling Design Part 1 – Application, Contaminated Land Guidelines

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), Canberra (ASC NEPM 2013).

WA DoH (2009) Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia, WA Department of Health and Department of Environment and Conservation.

WA DoH (2021) Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia, WA Department of Health and Department of Environment and Conservation.

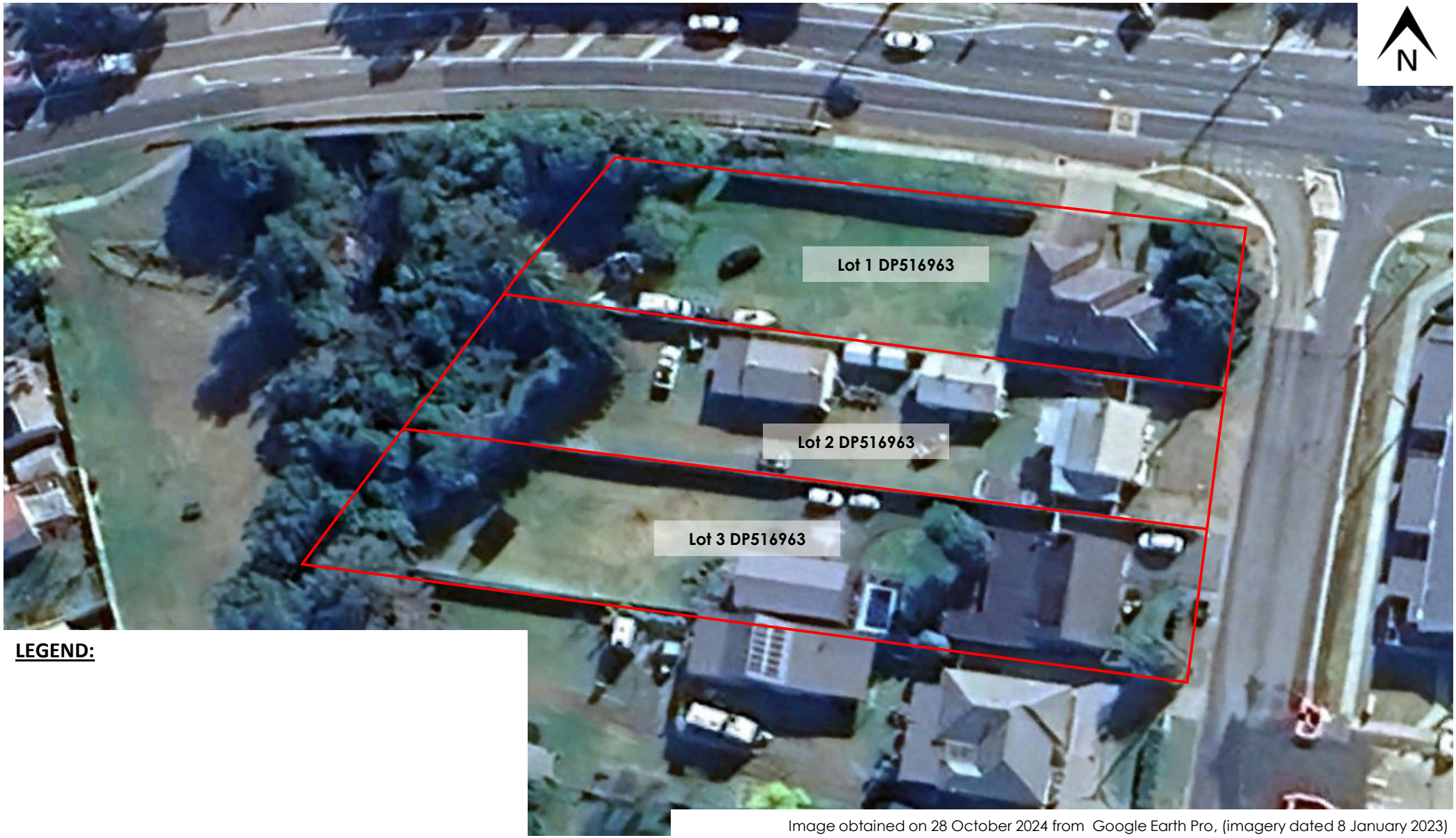
Qualtest (2024) Preliminary Site Investigation *1 – 5 Station Lane, Lochinvar NSW*. Ref: NEW24P-0254-AA dated 12 November 2024

APPENDIX A:
Figures

Image obtained on 28 October 2024 from Google Earth Pro, (imagery dated 8 January 2023)

Qualtest
LABORATORY (NSW) PTY LTD

Client:	MAVID DEVELOPMENTS PTY LTD	Drawing No:	FIGURE 1
Project:	PROPOSED CHILDCARE CENTRE	Project No:	NEW24P-0254-AA
Location:	1-5 STATION LANE, LOCHINVAR NSW	Scale:	N.T.S.
Title:	SITE LOCATION PLAN	Date:	28/10/2024

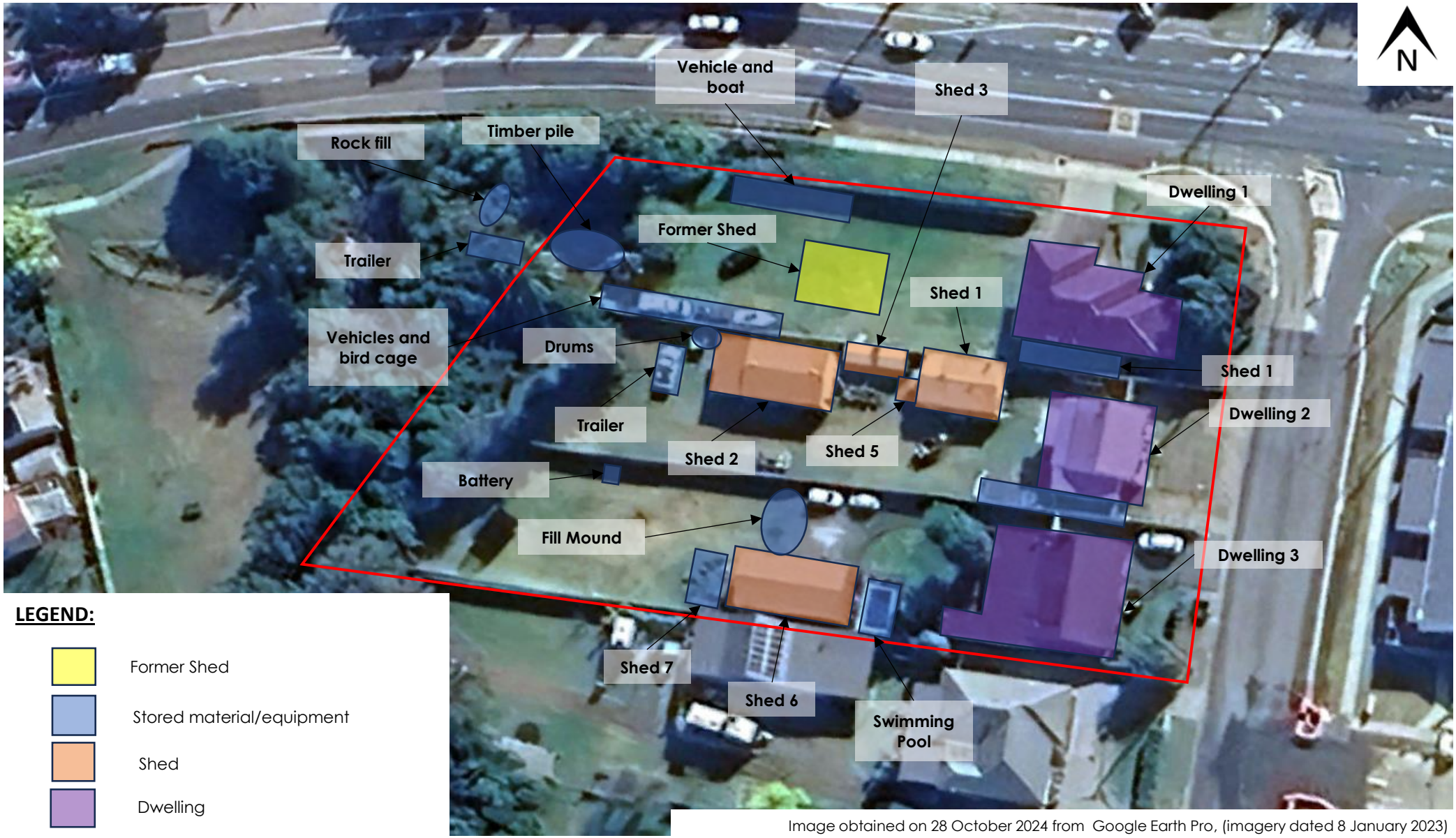


LEGEND:

Image obtained on 28 October 2024 from Google Earth Pro, (imagery dated 8 January 2023)

Qualtest LABORATORY (NSW) PTY LTD

Client:	MAVID DEVELOPMENTS PTY LTD	Drawing No:	FIGURE 2
Project:	PROPOSED CHILDCARE CENTRE	Project No:	NEW24P-0254-AA
Location:	1-5 STATION LANE, LOCHINVAR NSW	Scale:	N.T.S.
Title:	LOT LOCATION PLAN	Date:	28/10/2024



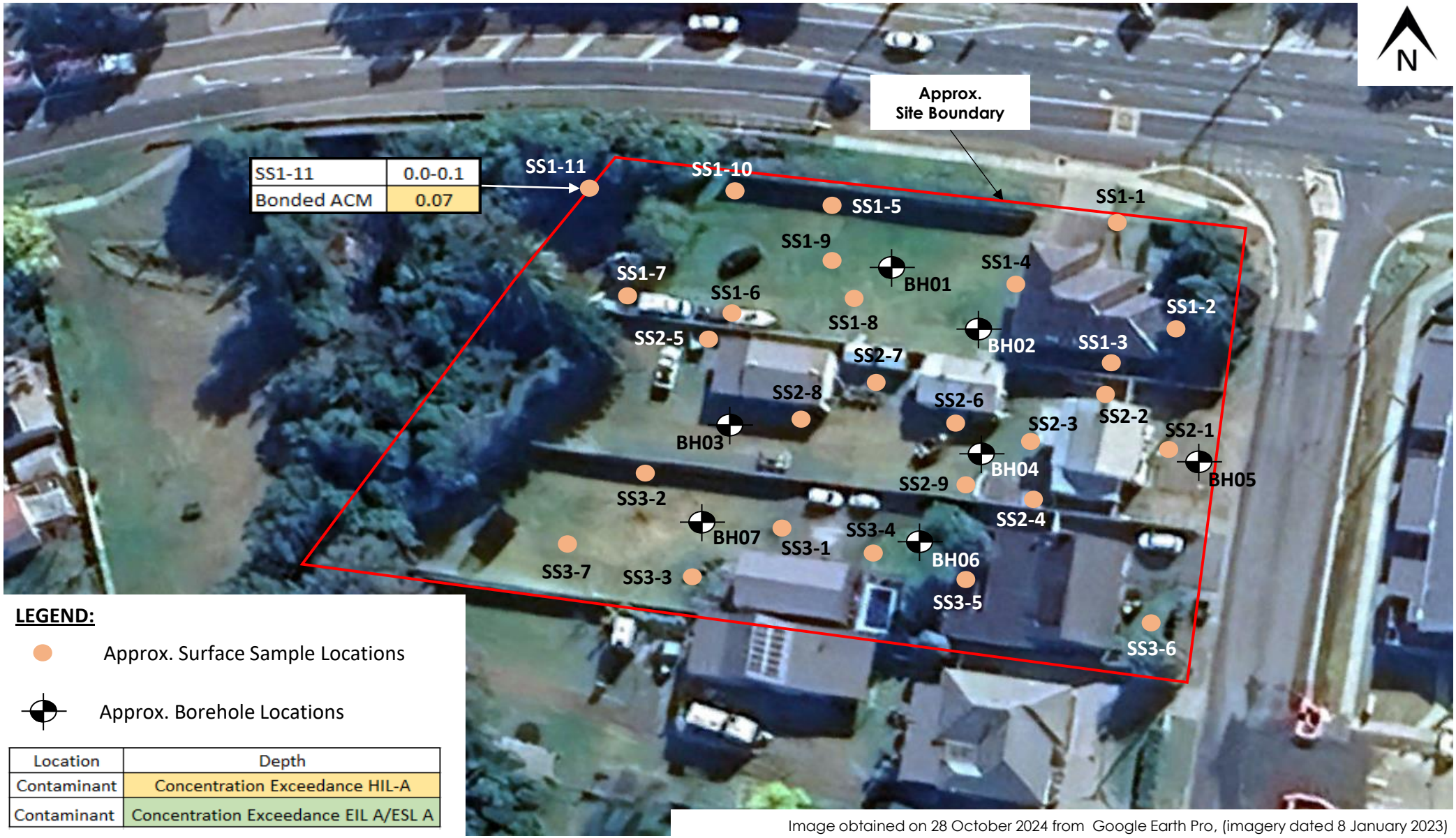
LEGEND:

- Former Shed
- Stored material/equipment
- Shed
- Dwelling

Image obtained on 28 October 2024 from Google Earth Pro, (imagery dated 8 January 2023)

Qualtest LABORATORY (NSW) PTY LTD

Client:	MAVID DEVELOPMENTS PTY LTD	Drawing No:	FIGURE 3
Project:	PROPOSED CHILDCARE CENTRE	Project No:	NEW24P-0254-AA
Location:	1-5 STATION LANE, LOCHINVAR NSW	Scale:	N.T.S.
Title:	SITE FEATURES PLAN	Date:	28/10/2024



SS1-11	0.0-0.1
Bonded ACM	0.07

LEGEND:

Approx. Surface Sample Locations

Approx. Borehole Locations

Location	Depth
Contaminant	Concentration Exceedance HIL-A
Contaminant	Concentration Exceedance EIL A/ESL A

Image obtained on 28 October 2024 from Google Earth Pro, (imagery dated 8 January 2023)

Qualtest LABORATORY (NSW) PTY LTD

Client:	MAVID DEVELOPMENTS PTY LTD	Drawing No:	FIGURE 4
Project:	PROPOSED CHILDCARE CENTRE	Project No:	NEW24P-0254-AA
Location:	1-5 STATION LANE, LOCHINVAR NSW	Scale:	N.T.S.
Title:	SITE FEATURES PLAN	Date:	28/10/2024

APPENDIX B:
Tables

Mavid Developments Pty Ltd
NEW24P-0254-AB

Table 1 - Soil Analytical Results - Metals, OCPs
1-5 Station Lane, Lochinvar NSW

					Field ID	BH01 0.0-0.1	BH06 0.15-0.25	SS1-1	SS1-2	SS1-3	SS1-4	SS1-5	SS1-6	SS1-7	SS1-9	SS1-10	SS2-1	SS2-2	SS2-3	SS2-4	SS2-5	SS2-6
					Date	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024
Analytes		**Units**	**LOR**	**HIL/HSL A [1]**	**EIL/ESL A [2]**																	
Metals	Arsenic	mg/kg	2	100	100	3.3	2	11	3.8	5.4	4.1	5	3.6	4.2	3.9	3.6	7.3	5.5	3.7	3	3.9	4.9
	Cadmium	mg/kg	0.4	20		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	0.4	< 0.4	< 0.4
	Chromium (total)	mg/kg	5	100	690*	66	53	30	30	46	34	43	41	40	34	37	58	20	39	34	34	60
	Copper	mg/kg	5	6000	250*	20	18	20	16	24	20	24	32	31	27	26	33	16	29	20	30	26
	Lead	mg/kg	5	300	1100	62	7.7	81	61	75	120	40	160	81	35	160	130	63	58	42	150	130
	Mercury	mg/kg	5	40		0.4	< 0.1	0.2	0.2	0.1	0.6	0.2	1.2	< 0.1	< 0.1	0.8	0.2	0.2	< 0.1	< 0.1	0.4	0.2
	Nickel	mg/kg	5	400	380*	32	49	22	22	29	20	33	41	41	35	26	26	9.5	23	22	21	38
	Zinc	mg/kg	5	7400	490*	33	33	85	81	82	190	100	120	280	110	110	200	120	340	470	190	250
CEC & pH	Cation Exchange Capacity	meq/100g	0.5			33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	pH (1:5 Aqueous extract)	pH units	0.1			7.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OCPs	4.4'-DDD	mg/kg	0.05	240		< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	4.4'-DDE	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	4.4'-DDT	mg/kg	0.05		180	< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	a-HCH	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Aldrin	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Aldrin and Dieldrin (Total)*	mg/kg	0.05	6		< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	b-HCH	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Chlordanes - Total	mg/kg	0.1	50		< 0.1	< 0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.1
	DDT + DDE + DDD (Total)*	mg/kg	0.05	240		< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	d-HCH	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Dieldrin	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Endosulfan I	mg/kg	0.05	270		< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Endosulfan II	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Endosulfan sulphate	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Endrin	mg/kg	0.05	10		< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Endrin aldehyde	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Endrin ketone	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	g-HCH (Lindane)	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Heptachlor	mg/kg	0.05	6		< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Heptachlor epoxide	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Hexachlorobenzene (HCB)	mg/kg	0.05	10		< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Methoxychlor	mg/kg	0.05	300		< 0.05	< 0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
	Toxaphene	mg/kg	0.5	20		< 0.5	< 0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.5

Notes

* EIL based on pH of 7.6 and CEC of 33mg/kg, and Clay content 50%, and using Ambient Background Concentration obtained from Olszowy et al (1995) using urban soils, old suburbs with high traffic , 25% percentile.

Result — Concentration exceeds adopted HIL/HSL A

Result — Concentration exceeds the adopted EIL/ESL A

1 ASC NEPM (2013) Health Investigation & Screening Levels, Residential, Clay 0m to <1m

2 NEPC (2013) Soil Ecological Investigation & Screening Levels, Residential, Fine Texture

Mavid Developments Pty Ltd
NEW24P-0254-AB

Table 1 - Soil Analytical Results - Metals, OCPs
1-5 Station Lane, Lochinvar NSW

					Field ID	SS2-7	SS2-8	SS2-9	SS3-1	SS3-2	SS3-3	SS3-4	SS3-6	SS3-7
					Date	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024
Analytes		**Units**	**LOR**	**HIL/HSL A [1]**	**EIL/ESL A [2]**									
Metals	Arsenic	mg/kg	2	100	100	97	6.1	4.1	2.7	6.6	6.1	4	3.4	5
	Cadmium	mg/kg	0.4	20		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
	Chromium (total)	mg/kg	5	100	690*	110	43	52	69	73	51	45	21	72
	Copper	mg/kg	5	6000	250*	110	27	30	21	34	24	16	13	30
	Lead	mg/kg	5	300	1100	520	150	310	14	170	31	18	24	53
	Mercury	mg/kg	5	40		0.5	0.3	< 0.1	< 0.1	0.2	< 0.1	< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	400	380*	38	26	33	63	47	30	28	13	47
	Zinc	mg/kg	5	7400	490*	390	140	260	61	94	140	50	73	87
CEC & pH	Cation Exchange Capacity	meq/100g	0.5			-	-	-	-	-	-	-	-	-
	pH (1:5 Aqueous extract)	pH units	0.1			-	-	-	-	-	-	-	-	-
OCPs	4.4'-DDD	mg/kg	0.05	240		< 0.05	< 0.05	-	-	-	-	-	-	-
	4.4'-DDE	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	4.4'-DDT	mg/kg	0.05		180	< 0.05	< 0.05	-	-	-	-	-	-	-
	a-HCH	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	Aldrin	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	Aldrin and Dieldrin (Total)*	mg/kg	0.05	6		0.24	< 0.05	-	-	-	-	-	-	-
	b-HCH	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	Chlordanes - Total	mg/kg	0.1	50		< 0.1	< 0.1	-	-	-	-	-	-	-
	DDT + DDE + DDD (Total)*	mg/kg	0.05	240		< 0.05	< 0.05	-	-	-	-	-	-	-
	d-HCH	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	Dieldrin	mg/kg	0.05			0.24	< 0.05	-	-	-	-	-	-	-
	Endosulfan I	mg/kg	0.05	270		< 0.05	< 0.05	-	-	-	-	-	-	-
	Endosulfan II	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	Endosulfan sulphate	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	Endrin	mg/kg	0.05	10		< 0.05	< 0.05	-	-	-	-	-	-	-
	Endrin aldehyde	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	Endrin ketone	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	g-HCH (Lindane)	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	Heptachlor	mg/kg	0.05	6		< 0.05	< 0.05	-	-	-	-	-	-	-
	Heptachlor epoxide	mg/kg	0.05			< 0.05	< 0.05	-	-	-	-	-	-	-
	Hexachlorobenzene (HCB)	mg/kg	0.05	10		< 0.05	< 0.05	-	-	-	-	-	-	-
	Methoxychlor	mg/kg	0.05	300		< 0.05	< 0.05	-	-	-	-	-	-	-
	Toxaphene	mg/kg	0.5	20		< 0.5	< 0.5	-	-	-	-	-	-	-

Notes

* EIL based on pH of 7.6 and CEC of 33mg/kg, and Clay content 50%, and using Ambient Background Concentration obtained from Olszowy et al (1995) using urban soils, old suburbs with high traffic , 25% percentile.

Result — Concentration exceeds adopted HIL/HSL A

Result — Concentration exceeds the adopted EIL/ESL A

1 ASC NEPM (2013) Health Investigation & Screening Levels, Residential, Clay 0m to <1m

2 NEPC (2013) Soil Ecological Investigation & Screening Levels, Residential, Fine Texture

Mavid Developments Pty Ltd
NEW24P-0254-AB

Table 2 - Soil Analytical Results - TRH, BTEX, PAH
1-5 Station Lane, Lochinvar NSW

						Field ID	BH01 0.0-0.1	BH06 0.15-0.25	SS1-1	SS1-4	SS1-5	SS1-6	SS1-7	SS1-10	SS2-4	SS2-5	SS2-7	SS2-8	SS3-3
						Date	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024
Analytes		**Units**	**LOR**	**HIL/HSL A [1]**	**EIL/ESL A [2]**														
PAHs	Acenaphthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5		0.7		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (medium bound)	mg/kg	0.6	3			0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Benzo(b&j)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	1.2	< 0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5		170		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5				< 0.5	< 0.5	< 0.5	< 0.5	1.1	< 0.5	0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	Total PAH	mg/kg	0.5	300			< 0.5	< 0.5	< 0.5	< 0.5	3	< 0.5	1.4	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1	0.7	65		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1	480	105		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1	NL	125		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	Xylenes - Total	mg/kg	0.3	110	45		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
TRH	Naphthalene	mg/kg	0.5	5	170		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
	TRH C6-C10	mg/kg	20		180		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20	50			< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
	TRH >C10-C16	mg/kg	50		120		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50	280			< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100		1300		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100		5600		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100

Notes

NL	Not limiting
Result	Concentration exceeds adopted HIL/HSL A
Result	Concentration exceeds the adopted EIL/ESL A

[1] ASC NEPM (2013) Health Investigation & Screening Levels, Residential, Clay 0m to <1m
[2] NEPC (2013) Soil Ecological Investigation & Screening Levels, Residential, Fine Texture

Mavid Developments Pty Ltd
NEW24P-0254-AB

Table 3: Asbestos Results
1-5 Station Lane, Lochinvar NSW

	Sample ID	BH01 0.0-0.1	BH02 0.0-0.1	BH03 0.0-0.1	BH04 0.0-0.1	BH05 0.0-0.1	BH06 0.0-0.15	BH07 0.0-0.1	SS1-1	SS1-2	SS1-3	SS1-4	SS1-5	SS1-6	SS1-7	SS1-8	SS1-9	SS1-10	SS1-11	SS2-1	SS2-2	SS2-3	SS2-4	SS2-5
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
	Sample Date	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024
	HIL/HSL A																							
ACM weight (g)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	0	0	0	0	0
ACM weight (kg)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.086	0	0	0	0	0
Soil density (kg/L)		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Soil Volume (L)		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Asbestos Content (%)		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
%w/w ACM in Soil	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00
%w/w FA/AF in Soil	0.001	<0.001%	-	-	-	-	-	-	<0.001%	-	<0.001%	-	<0.001%	<0.001%	-	-	<0.001%	-	<0.001%	<0.001%	<0.001%	<0.001%	<0.001%	-
Asbestos ID	Detected	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
%w/w asbestos in soil calculated using: % asbestos content x bonded ACM (kg) / soil volume (L) x soil density (kg/L)

Result	Exceeds adopted criteria
Detected	Detected below adopted criteria

Criteria from ASC NEPM (2013) Table 7 - Health Screening Level (HSL) for Asbestos, Residential

Mavid Developments Pty Ltd
NEW24P-0254-AB

Table 3: Asbestos Results
1-5 Station Lane, Lochinvar NSW

	Sample ID	SS2-6	SS2-7	SS2-8	SS2-9	SS3-1	SS3-2	SS3-3	SS3-4	SS3-5	SS3-6	SS3-7	ASB1
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Material
	Sample Date	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024	2/12/2024
	HIL/HSL A												
ACM weight (g)		0	0	0	0	0	0	0	0	0	0	0	-
ACM weight (kg)		0	0	0	0	0	0	0	0	0	0	0	-
Soil density (kg/L)		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	-
Soil Volume (L)		10	10	10	10	10	10	10	10	10	10	10	-
Asbestos Content (%)		15	15	15	15	15	15	15	15	15	15	15	-
%w/w ACM in Soil	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
%w/w FA/AF in Soil	0.001	<0.001%	<0.001%	<0.001%	-	<0.001%	-	-	-	-	-	-	-
Asbestos ID	Detected	-	-	-	-	-	-	-	-	-	-	-	Detected

Notes:
%w/w asbestos in soil calculated using: %

Result	Exceeds adopted
Detected	Detected below

Criteria from ASC NEPM (2013) Table 7 - H

Table 4 - Quality Control Results
1-5 Station Lane, Lochinvar NSW

		Sample ID		SS1-1	D1.2.12.24	RPD %
		Date		2/12/2024	2/12/2024	
		Type		Primary	Duplicate	
Analytes		**Soil Units**	**LOR**			
Metals	Arsenic	mg/kg	2	11	12	9
	Cadmium	mg/kg	0.4	< 0.4	< 0.4	0
	Chromium	mg/kg	5	30	33	10
	Copper	mg/kg	5	20	20	0
	Lead	mg/kg	5	81	79	3
	Mercury	mg/kg	0.1	0.2	0.2	0
	Nickel	mg/kg	5	22	24	9
	Zinc	mg/kg	5	85	86	1
PAHs	Acenaphthene	mg/kg	0.5	< 0.5	< 0.5	0
	Acenaphthylene	mg/kg	0.5	< 0.5	< 0.5	0
	Anthracene	mg/kg	0.5	< 0.5	< 0.5	0
	Benz(a)anthracene	mg/kg	0.5	< 0.5	< 0.5	0
	Benzo(a)pyrene	mg/kg	0.5	< 0.5	< 0.5	0
	Benzo(a)pyrene TEQ (medium boun	mg/kg	0.6	0.6	0.6	0
	Benzo(b&j)fluoranthene	mg/kg	0.5	< 0.5	< 0.5	0
	Benzo(g.h.i)perylene	mg/kg	0.5	< 0.5	< 0.5	0
	Benzo(k)fluoranthene	mg/kg	0.5	< 0.5	< 0.5	0
	Chrysene	mg/kg	0.5	< 0.5	< 0.5	0
	Dibenz(a.h)anthracene	mg/kg	0.5	< 0.5	< 0.5	0
	Fluoranthene	mg/kg	0.5	< 0.5	< 0.5	0
	Fluorene	mg/kg	0.5	< 0.5	< 0.5	0
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5	< 0.5	< 0.5	0
	Naphthalene	mg/kg	0.5	< 0.5	< 0.5	0
	Phenanthrene	mg/kg	0.5	< 0.5	< 0.5	0
	Pyrene	mg/kg	0.5	< 0.5	< 0.5	0
	Total PAH	mg/kg	0.5	< 0.5	< 0.5	0
BTEX	Benzene	mg/kg	0.1	< 0.1	< 0.1	0
	Toluene	mg/kg	0.1	< 0.1	< 0.1	0
	Ethylbenzene	mg/kg	0.1	< 0.1	< 0.1	0
	Xylenes - Total	mg/kg	0.3	< 0.3	< 0.3	0
TRH	Naphthalene	mg/kg	0.5	< 0.5	< 0.5	0
	TRH C6-C10	mg/kg	20	< 20	< 20	0
	TRH C6-C10 less BTEX (F1)	mg/kg	20	< 20	< 20	0
	TRH >C10-C16	mg/kg	50	< 50	< 50	0
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50	< 50	< 50	0
	TRH >C16-C34	mg/kg	100	< 100	< 100	0
	TRH >C34-C40	mg/kg	100	< 100	< 100	0

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.2 12/12/2024 10:06:03 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

chromium

General Statistics

Total Number of Observations	24	Number of Distinct Observations	19
		Number of Missing Observations	0
Minimum	20	Mean	46.5
Maximum	110	Median	42
SD	19.81	Std. Error of Mean	4.043
Coefficient of Variation	0.426	Skewness	1.545

Normal GOF Test

Shapiro Wilk Test Statistic	0.878	**Shapiro Wilk GOF Test**
1% Shapiro Wilk Critical Value	0.884	Data Not Normal at 1% Significance Level
Lilliefors Test Statistic	0.177	**Lilliefors GOF Test**
1% Lilliefors Critical Value	0.205	Data appear Normal at 1% Significance Level

Data appear Approximate Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	53.43	95% Adjusted-CLT UCL (Chen-1995)	54.51
		95% Modified-t UCL (Johnson-1978)	53.64

Gamma GOF Test

A-D Test Statistic	0.384	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.746	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.126	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.178	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	6.739	k star (bias corrected MLE)	5.925
Theta hat (MLE)	6.9	Theta star (bias corrected MLE)	7.849
nu hat (MLE)	323.5	nu star (bias corrected)	284.4
MLE Mean (bias corrected)	46.5	MLE Sd (bias corrected)	19.1
		Approximate Chi Square Value (0.05)	246.3
Adjusted Level of Significance	0.0392	Adjusted Chi Square Value	243.8

Assuming Gamma Distribution

95% Approximate Gamma UCL	53.68	95% Adjusted Gamma UCL	54.23

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.974	**Shapiro Wilk Lognormal GOF Test**
10% Shapiro Wilk Critical Value	0.93	Data appear Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.106	**Lilliefors Lognormal GOF Test**
10% Lilliefors Critical Value	0.162	Data appear Lognormal at 10% Significance Level

56	Data appear Lognormal at 10% Significance Level										
57											
58	**Lognormal Statistics**										
59				Minimum of Logged Data	2.996				Mean of logged Data	3.763	
60				Maximum of Logged Data	4.7				SD of logged Data	0.392	
61											
62	**Assuming Lognormal Distribution**										
63				95% H-UCL	54.34				90% Chebyshev (MVUE) UCL	57.82	
64				95% Chebyshev (MVUE) UCL	63				97.5% Chebyshev (MVUE) UCL	70.19	
65				99% Chebyshev (MVUE) UCL	84.31						
66											
67	**Nonparametric Distribution Free UCL Statistics**										
68	Data appear to follow a Discernible Distribution										
69											
70	**Nonparametric Distribution Free UCLs**										
71				95% CLT UCL	53.15				95% BCA Bootstrap UCL	54.38	
72				95% Standard Bootstrap UCL	53.14				95% Bootstrap-t UCL	55.71	
73				95% Hall's Bootstrap UCL	57.57				95% Percentile Bootstrap UCL	53.54	
74				90% Chebyshev(Mean, Sd) UCL	58.63				95% Chebyshev(Mean, Sd) UCL	64.12	
75				97.5% Chebyshev(Mean, Sd) UCL	71.75				99% Chebyshev(Mean, Sd) UCL	86.73	
76											
77	**Suggested UCL to Use**										
78				95% Student's-t UCL	53.43						
79											
80	When a data set follows an approximate distribution passing only one of the GOF tests,										
81	it is suggested to use a UCL based upon a distribution passing both GOF tests in ProUCL										
82											
83	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.										
84	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.										
85	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.										
86											

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.2 12/12/2024 10:07:27 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Lead

General Statistics

Total Number of Observations	24	Number of Distinct Observations	20
		Number of Missing Observations	0
Minimum	14	Mean	111.5
Maximum	520	Median	78
SD	110.5	Std. Error of Mean	22.55
Coefficient of Variation	0.991	Skewness	2.525

Normal GOF Test

Shapiro Wilk Test Statistic	0.729	**Shapiro Wilk GOF Test**	
1% Shapiro Wilk Critical Value	0.884	Data Not Normal at 1% Significance Level	
Lilliefors Test Statistic	0.215	**Lilliefors GOF Test**	
1% Lilliefors Critical Value	0.205	Data Not Normal at 1% Significance Level	

Data Not Normal at 1% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	150.1	95% Adjusted-CLT UCL (Chen-1995)	161
		95% Modified-t UCL (Johnson-1978)	152.1

Gamma GOF Test

A-D Test Statistic	0.387	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.761	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.122	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.181	Detected data appear Gamma Distributed at 5% Significance Level	

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.508	k star (bias corrected MLE)	1.348
Theta hat (MLE)	73.92	Theta star (bias corrected MLE)	82.74
nu hat (MLE)	72.4	nu star (bias corrected)	64.69
MLE Mean (bias corrected)	111.5	MLE Sd (bias corrected)	96.05
		Approximate Chi Square Value (0.05)	47.18
Adjusted Level of Significance	0.0392	Adjusted Chi Square Value	46.13

Assuming Gamma Distribution

95% Approximate Gamma UCL	152.9	95% Adjusted Gamma UCL	156.4

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.982	**Shapiro Wilk Lognormal GOF Test**	
10% Shapiro Wilk Critical Value	0.93	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.108	**Lilliefors Lognormal GOF Test**	
10% Lilliefors Critical Value	0.162	Data appear Lognormal at 10% Significance Level	

	A	B	C	D	E	F	G	H	I	J	K	L
56	Data appear Lognormal at 10% Significance Level											
57												
58	Lognormal Statistics											
59	Minimum of Logged Data					2.639			Mean of logged Data			4.347
60	Maximum of Logged Data					6.254			SD of logged Data			0.881
61												
62	Assuming Lognormal Distribution											
63	95% H-UCL					176.7			90% Chebyshev (MVUE) UCL			178.3
64	95% Chebyshev (MVUE) UCL					208.5			97.5% Chebyshev (MVUE) UCL			250.5
65	99% Chebyshev (MVUE) UCL					332.9						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data appear to follow a Discernible Distribution											
69												
70	Nonparametric Distribution Free UCLs											
71	95% CLT UCL					148.6			95% BCA Bootstrap UCL			158.4
72	95% Standard Bootstrap UCL					148.2			95% Bootstrap-t UCL			180.1
73	95% Hall's Bootstrap UCL					341.7			95% Percentile Bootstrap UCL			149.7
74	90% Chebyshev(Mean, Sd) UCL					179.1			95% Chebyshev(Mean, Sd) UCL			209.8
75	97.5% Chebyshev(Mean, Sd) UCL					252.3			99% Chebyshev(Mean, Sd) UCL			335.9
76												
77	Suggested UCL to Use											
78	95% Adjusted Gamma UCL					156.4						
79												
80	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
81	Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.											
82	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
83												

APPENDIX C:
Borehole Logs

ENGINEERING LOG - BOREHOLE

CLIENT: MAVID DEVELOPMENTS PTY LTD
PROJECT: PROPOSED CHILDCARE CENTRE
LOCATION: 1 -5 STATION LANE, LOCHINVAR NSW

BOREHOLE NO: BH01
PAGE: 1 OF 1
JOB NO: NEW24P-0254
LOGGED BY: BB/LC
DATE: 2/12/24

DRILL TYPE: 2.7 TONNE EXCAVATOR
BOREHOLE DIAMETER: 300 mm
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T	Not Encountered	E 0.10m				CL	FILL-TOPSOIL: Sandy CLAY / Clayey SAND - low plasticity, dark brown, fine to medium grained sand, root affected.	M < w_P				FILL - TOPSOIL
							Star picket encountered in fill, borehole moved over 0.2m and restarted.					
							0.30m					
						SC	FILL: Clayey SAND - fine to medium grained, brown, fines of low plasticity.					FILL
		0.50m		0.5								
		E 0.60m					0.60m	M				
						SM	FILL: Silty Gravelly SAND - fine to coarse grained, dark grey, fine to medium grained, angular gravel, fines of low plasticity, trace pockets Sandy CLAY (medium to high plasticity, grey-brown and brown, fine to coarse grained sand) with some coal and slag.					
		0.90m					0.90m					
		E & U50		1.0		CH	FILL: Sandy CLAY - high plasticity, dark brown with some pale orange-brown to brown, fine to medium grained sand, trace rootlets.			HP	180	FILL / POSSIBLE ALLUVIUM
		1.15m					1.15m					
		E 1.25m				CH	CLAY - high plasticity, grey with some pale brown, fine to medium grained sand.			HP	170	ALLUVIUM / POSSIBLE FILL
							Becoming pale brown and grey.			HP	180	
				1.5					St			
							1.60m			HP	180	
						CH	Sandy CLAY - high plasticity, brown to pale brown, with some grey, fine grained sand.	M > w_P				ALLUVIUM
										HP	180	
				2.0								
							2.10m					
						CH	Sandy CLAY - medium to high plasticity, pale brown to pale orange-brown, fine to coarse grained (mostly fine to medium grained) sand, trace fine grained sub-angular to sub-rounded gravel.		VSt	HP	300	RESIDUAL SOIL
							2.30m					
							Hole Terminated at 2.30 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - BOREHOLE

CLIENT: MAVID DEVELOPMENTS PTY LTD
PROJECT: PROPOSED CHILDCARE CENTRE
LOCATION: 1 -5 STATION LANE, LOCHINVAR NSW

BOREHOLE NO: BH02
PAGE: 1 OF 1
JOB NO: NEW24P-0254
LOGGED BY: BB/LC
DATE: 2/12/24

DRILL TYPE: 2.7 TONNE EXCAVATOR
BOREHOLE DIAMETER: 300 mm
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T	Not Encountered	E 0.10m				CL	0.05m FILL-TOPSOIL: Sandy CLAY - low to medium plasticity, dark brown, fine to coarse grained sand, root affected.					FILL - TOPSOIL
							FILL: Sandy CLAY - medium to high plasticity, dark brown, fine to coarse grained (mostly fine to medium grained) sand, with some fine to medium grained, angular gravel (black brick?).					FILL
										HP	360	
						CH						
		0.50m		0.5				M > w_P				
		E 0.60m								HP	340	
		0.80m					0.80m					
							CLAY - high plasticity, pale brown, with some fine to coarse grained (mostly fine to medium grained) sand.					ALLUVIUM
		E & U50		1.0		CH			VSt	HP	310	
		1.10m					1.10m					
							Sandy CLAY - medium to high plasticity, pale brown to pale grey-brown, fine to coarse grained (mostly fine grained) sand, trace fine grained, sub-angular to sub-rounded gravel.					RESIDUAL SOIL
										HP	350	
				1.5			Pockets and lenses of extremely weathered rock.					
						CH		M ~ w_P	Fb / VSt			
										HP	360	
				2.0			Pocket of highly weathered rock/possible floater.					
										HP	350	
							2.30m					
							Hole Terminated at 2.30 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - BOREHOLE

CLIENT: MAVID DEVELOPMENTS PTY LTD
PROJECT: PROPOSED CHILDCARE CENTRE
LOCATION: 1 -5 STATION LANE, LOCHINVAR NSW

BOREHOLE NO: BH03
PAGE: 1 OF 1
JOB NO: NEW24P-0254
LOGGED BY: BB/LC
DATE: 2/12/24

DRILL TYPE: 2.7 TONNE EXCAVATOR
BOREHOLE DIAMETER: 300 mm
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
AD/T	Not Encountered	E 0.10m				CL	0.05m FILL-TOPSOIL: Sandy CLAY/Clayey SAND - low plasticity, dark brown, fine grained sand, root affected.	M > w_P				FILL - TOPSOIL
						SP	FILL: SAND - fine to medium grained, pale brown to brown with some pale orange-brown, trace fine to medium grained, angular gravel.	M				FILL
		0.40m					0.40m Piece of black PVC plastic.					RESIDUAL SOIL
		E & U50 0.75m		0.5		CH	Sandy CLAY - high plasticity, brown, fine to coarse grained (mostly fine to medium grained) sand.	M > w_P	St	HP	180	
										HP	150	
				1.0						HP	160	
										HP	160	
							1.30m Sandy CLAY - medium plasticity, brown, fine to coarse grained sand, with some fine to medium grained, angular to sub-angular gravel.			HP	210	
				1.5		CI			VSt	HP	250	
										HP	240	
							1.80m Extremely Weathered Andesite with soil properties: breaks down into Gravelly Sandy CLAY - medium plasticity, brown, fine to coarse grained sand, fine to medium grained, angular to sub-angular gravel.					EXTREMELY WEATHERED ROCK
				2.0			1.90m Andesite - fine to coarse grained, brown, estimated extremely to very low strength.	M ~ w_P	H / Fb			EXTREMELY TO HIGHLY WEATHERED ROCK
							2.30m Hole Terminated at 2.30 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - BOREHOLE

CLIENT: MAVID DEVELOPMENTS PTY LTD
PROJECT: PROPOSED CHILDCARE CENTRE
LOCATION: 1 -5 STATION LANE, LOCHINVAR NSW

BOREHOLE NO: BH04
PAGE: 1 OF 1
JOB NO: NEW24P-0254
LOGGED BY: BB/LC
DATE: 2/12/24

DRILL TYPE: 2.7 TONNE EXCAVATOR
BOREHOLE DIAMETER: 300 mm
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	E 0.10m				CL	0.10m TOPSOIL: Sandy CLAY - low to medium plasticity, dark brown, fine to medium grained (mostly fine grained) sand, root affected.	M > w_P				TOPSOIL
						CH	Sandy CLAY - medium to high plasticity, dark brown, fine to coarse grained (mostly fine to medium grained) sand.		H	HP	>600	RESIDUAL SOIL
				0.5						HP	>600	
		0.70m U50 0.85m				CH	0.60m Sandy CLAY - medium to high plasticity, pale brown to grey-brown, fine to coarse grained sand, trace fine grained angular gravel.					
				1.0			0.85m Extremely Weathered Andesite with soil properties: breaks down into Gravelly Sandy CLAY - medium plasticity, brown, fine to coarse grained sand, fine to medium grained, angular to sub-angular gravel.	M < w_P				EXTREMELY WEATHERED ROCK
				1.5			Pocket of Feldspar as coarse grained gravel.		H / Fb			
				2.0			2.00m SANDSTONE - fine to medium grained, red-brown, estimated very low to medium strength, fractured.					HIGHLY WEATHERED ROCK
							2.30m Hole Terminated at 2.30 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - BOREHOLE

CLIENT: MAVID DEVELOPMENTS PTY LTD
PROJECT: PROPOSED CHILDCARE CENTRE
LOCATION: 1 -5 STATION LANE, LOCHINVAR NSW

BOREHOLE NO: BH05
PAGE: 1 OF 1
JOB NO: NEW24P-0254
LOGGED BY: BB/LC
DATE: 2/12/24

DRILL TYPE: 2.7 TONNE EXCAVATOR
BOREHOLE DIAMETER: 300 mm
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	E 0.10m				CL	TOPSOIL: Sandy CLAY - low plasticity, dark brown, fine grained sand, root affected.					TOPSOIL
							0.10m					RESIDUAL SOIL
							Sandy CLAY - medium to high plasticity, pale orange-brown, trace pale grey, fine to medium grained sand.			HP	>600	
		0.40m										
		U50		0.5		CH		M < w_P	H	HP	550	
		0.60m										
										HP	530	
				1.0			1.00m					
							CLAY - medium to high plasticity, pale orange-brown to orange-brown, with some fine to medium grained (mostly fine grained) sand.			HP	250	
						CH		M > w_P	VSt	HP	>600	
				1.5						HP	380	
							1.60m					
							Sandy CLAY - medium to high plasticity, pale brown to pale orange-brown, fine to coarse grained sand, trace fine grained sub-rounded to sub-angular gravel.	M < w_P	VSt / Fb			
				2.0		CH						
								M ~ w_P	H	HP	520	
							2.30m					
							Hole Terminated at 2.30 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - BOREHOLE

CLIENT: MAVID DEVELOPMENTS PTY LTD
PROJECT: PROPOSED CHILDCARE CENTRE
LOCATION: 1 -5 STATION LANE, LOCHINVAR NSW

BOREHOLE NO: BH06
PAGE: 1 OF 1
JOB NO: NEW24P-0254
LOGGED BY: BB/LC
DATE: 2/12/24

DRILL TYPE: 2.7 TONNE EXCAVATOR
BOREHOLE DIAMETER: 300 mm
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	E 0.15m				CL	FILL-TOPSOIL: Sandy CLAY - low to medium plasticity, brown, fine to coarse grained (mostly fine grained) sand, root affected.	M > w_P				FILL - TOPSOIL
		E 0.25m				CH	0.15m FILL: Gravelly Sandy CLAY - medium to high plasticity, brown, fine to coarse grained sand, fine to medium grained (mostly fine grained) angular gravel, with some slag.	M ~ w_P				FILL
						GP	0.30m FILL: GRAVEL - medium grained angular, pale orange-brown and grey.	D				
				0.5			0.40m Top of black corrugated PVC pipe, approximately 450mm in diameter. Hole Terminated at 0.40 m Terminated due to encountered service					
				1.0								
				1.5								
				2.0								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - BOREHOLE

CLIENT: MAVID DEVELOPMENTS PTY LTD
PROJECT: PROPOSED CHILDCARE CENTRE
LOCATION: 1 -5 STATION LANE, LOCHINVAR NSW

BOREHOLE NO: BH07
PAGE: 1 OF 1
JOB NO: NEW24P-0254
LOGGED BY: BB/LC
DATE: 2/12/24

DRILL TYPE: 2.7 TONNE EXCAVATOR
BOREHOLE DIAMETER: 300 mm
SURFACE RL:
DATUM:

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
AD/T	Not Encountered	E 0.10m				CH	FILL: CLAY - high plasticity, dark brown, trace fine to medium grained sand, root affected top 0.1m.	M ~ w_P				FILL
		0.50m		0.5			White PVC pipe (stormwater), approximately 90mm in diameter. 0.50m					
		E 0.60m					Sandy CLAY - medium to high plasticity, pale brown to orange-brown, fine to coarse grained (mostly fine grained) sand.		VSt			RESIDUAL SOIL
		1.00m		1.0								
		U50 1.20m				CH		M > w_P	St			
				1.5								
				2.0				M < w_P				
							2.30m Hole Terminated at 2.30 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

APPENDIX D:
Data Validation Report

QA/QC DATA VALIDATION REPORT
JOB NO.: NEW24P-0254 – DETAILED SITE INVESTIGATION

Eurofins reports: 1166792-S, 1166792-AID

1. SAMPLE HANDLING

Item	Yes/No	Comments
Were the sample holding times met?	Yes	-
Were the samples in proper custody between collection in the field and reaching the laboratory?	Yes	-
Were the samples properly and adequately preserved?	Yes	-
Were the samples received by the laboratory in good condition?	Yes	-

Sampling Handling was:

Satisfactory :	✓	**Partially Satisfactory:**		**Unsatisfactory:**	

2. PRECISION AND ACCURACY ASSESSMENT

Item	Yes/No	Comment
Was a NATA registered laboratory used?	Yes	-
Did the laboratory perform the requested tests?	Yes	-
Were the laboratory methods adopted NATA endorsed?	Yes	-
Were the appropriate test procedures followed?	Yes	-
Were the reporting limits satisfactory?	Yes	-
Was the NATA seal on the reports?	Yes	-
Were the reports signed by an authorised person?	Yes	-

Laboratory Precision and Accuracy was:

Satisfactory :	✓	**Partially Satisfactory:**		**Unsatisfactory:**	

3. FIELD QA/QC

Soil Samples

No. Samples Analysed	27
Duplicates	1
Triplicates	0
Trip Blanks	0
Wash Blanks	0
Trip Spikes	0

No. Days Sampling

Item	Soil
Number of Days Sampling	1
Number of Sampling Events	1

Field Duplicates

Item	Yes/No	Comments
Were an adequate number of field duplicates collected?	No	Duplicates collected at a rate of 1 per 27 samples, slightly below the required 1 per 20 samples. Based on the RPD results, the data is considered to be representative of concentrations at the sampling points and the slightly lower duplicate sampling density is not considered to affect the results.
Were RPDs within control limits? No Limit for 5-10 x EQL and 30% for >10 x EQL	Yes	-

Trip Blanks/Trip Spikes

Item	Yes/No	Comments
Were an adequate number of trip blanks and trip spikes collected?	Yes	No trip blanks or spikes were collected, as volatiles were not a primary contaminant of concern, which was supported by field observations.
Were the trip blanks free of contaminants?	NA	
Were the trip spikes within recovery limits (between 80% and 120%)	NA	

Rinsate Samples

Item	Yes/No	Comments
Were an adequate number of rinsate samples used? (1 per day of using reusable sampling equipment – trowel, hand auger etc)	Yes	Rinsate samples were not collected, as no reusable sampling equipment was used.

Were the rinsate samples free of contaminants? (If no, comment whether the contaminants present are also detected in the samples and whether they are common laboratory chemicals).	N/A	

Field QC was:

Satisfactory :	✓	**Partially Satisfactory:**	**Unsatisfactory:**

4. LABORATORY INTERNAL QUALITY CONTROL PROCEDURES

A) Type of QA/QC Sample	Yes/No	Comments
Laboratory Blanks/Reagent Blanks (at least 1 per batch)	Yes	
Laboratory Duplicates (at least 1 per batch or 1 per 10 samples)	Yes	
Matrix Spikes, Matrix Spike Duplicates (1 for each soil type)	Yes	
Laboratory Control Spike	Yes	
Surrogate (where appropriate)	Yes	

Item	Yes/ No	Comments
B) Were the laboratory blanks and/or reagent blanks free of contamination?	Yes	
C) Were the spike recoveries within control limits?	Yes	
D) Were the RPDs of the laboratory duplicates within control limits?	No	Lead and zinc RPDs were outside of control limits. The lab quoted a Q02 which states: '*The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause*'. Based on this the usability of the data has not been impacted. For mercury the lab quoted code Q15 which states: '*The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.*'
E) Were the surrogate recoveries within control limits?	Yes	

Laboratory Internal QA/QC was:

Satisfactory :	✓	**Partially Satisfactory:**	**Unsatisfactory:**

5. DATA USABILITY

Item	Yes/No	Comments
Was the data directly usable?	Yes	
Was the data usable with the following corrections/modifications? (see comments)	NA	
Was the data not usable?	NA	

APPENDIX E:
Laboratory Reports

CHAIN OF CUSTODY RECORD

Eurofins | Environment Testing ABN 50 005 085 521

☐ Sydney Laboratory
Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1 21 Smallwood Place Murarrie QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2 91 Leach Highway Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
6 Monterey Road Dandenong South VIC 3175
03 8564 5000 EnviroSampleVic@eurofins.com

1

Company	Qualtest	Project №	NEW24P-0254	Project Manager	Emma Coleman
Address	2 Murray Dwyer Circuit NSW 2304	Project Name	DSI - Station Lane, Lochinvar	EDD Format (ESdat, EQuIS etc)	Excel
Contact Name	Emma Coleman				
Phone №					
Special Directions					
Purchase Order					
Quote ID №	180622QUAN-3				

Sampler(s)	Lewis Callinan				
Handed over by					
Email for Invoice	accounts@qualtest.com.au				
Email for Results	libbybetz@qualtest.com.au emmacoleman@qualtest.com.au billysnow@qualtest.com.au lewiscallinan@qualtest.com.au tomhall@qualtest.com.au				

Analyses — Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing.

Containers — Change container type & size if necessary.

Required Turnaround Time (TAT) — Default will be 5 days if not ticked.

♦Surcharge will apply
☐ Overnight (reporting by 9am)♦
☐ Same day♦ ☐ 1 day♦
☐ 2 days♦ ☐ 3 days♦
☑ 5 days (Standard)
☐ Other( )

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	OCPs	Metals(M8)	Asbestos (NEPM w/w%)	pH, CEC	Suite B4 (TRH, BTEX, PAH)	Suite B7 (TRH, BTEX, PAH, Metals)	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH01 0.0-0.1	2/12/24	SOIL	X		X	X		X							1	1	
2	BH01 0.5-0.6	2/12/24	SOIL													1	1	
3	BH01 0.9-1.0	2/12/24	SOIL													1		
4	BH01 1.15-1.25	2/12/24	SOIL													1		
5	BH02 0.0-0.1	2/12/24	SOIL													1	1	
6	BH02 0.5-0.6	2/12/24	SOIL													1	1	
7	BH02 0.8-0.9	2/12/24	SOIL													1		
8	BH03 0.0-0.1	2/12/24	SOIL													1	1	
9	BH03 0.4-0.5	2/12/24	SOIL													1	1	
10	BH03 0.5-0.6	2/12/24	SOIL													1		
	Total Counts			1		1	1		1							10	6	

page 1/2 1/5

Method of Shipment: ☐ Courier (#) ☐ Hand Delivered ☐ Postal

Name: Lewis Callinan Signature: Date: 3-12-24 Time:

Laboratory Use Only

Received By	Ymatrone	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	3/12	Time 12:4
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date		Time

Temperature: 13.3 Report №: 116792

CHAIN OF CUSTODY RECORD

Eurofins | Environment Testing ABN 50 005 085 521

☐ **Sydney Laboratory**
Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory**
Unit 1 21 Smallwood Place Murarrie QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ **Perth Laboratory**
Unit 2 91 Leach Highway Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory**
6 Monterey Road Dandenong South VIC 3175
03 8564 5000 EnviroSampleVic@eurofins.com

2

Company	Qualtest	**Project №**	NEW24P-0254	**Project Manager**	Emma Coleman
Address	2 Murray Dwyer Circuit NSW 2304	**Project Name**	DSI - Station Lane, Lochinvar	**EDD Format** (ESdat, EQuIS etc)	Excel
Contact Name	Emma Coleman			**Sampler(s)**	Lewis Calinan
Phone №				**Handed over by**	
Special Directions				**Email for Invoice**	accounts@qualtest.com.au
Purchase Order				**Email for Results**	libbybetz@qualtest.com.au emmacoleman@qualtest.com.au billysnow@qualtest.com.au lewiscallinan@qualtest.com.au tomhall@qualtest.com.au
Quote ID №	180622QUAN-3				

Analyses (Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing)

Containers (Change container type & size if necessary.)

Required Turnaround Time (TAT) (Default will be 5 days if not ticked.)

♦Surcharge will apply
☐ Overnight (reporting by 9am)♦
☐ Same day♦ ☐ 1 day♦
☐ 2 days♦ ☐ 3 days♦
☑ 5 days (Standard)
☐ Other( )

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	OCPs	Metals(M8)	Asbestos (NEPM w/w%)	pH, CEC	Suite B4 (TRH, BTEX, PAH)	Suite B7 (TRH, BTEX, PAH, Metals)	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	BH04 0.0-0.1	2/12/24	SOIL													1	1	
2	BH05 0.0-0.1	2/12/24	SOIL													1	1	
3	BH06 0.0-0.15	2/12/24	SOIL													1		
4	BH06 0.15-0.25	2/12/24	SOIL	X					X							1		
5	BH07 0.0-0.1	2/12/24	SOIL													1	1	
6	BH07 0.5-0.6	2/12/24	SOIL													1	1	
7	SS1-1	2/12/24	SOIL			X			X							1		
8	SS1-2	2/12/24	SOIL		X											1	1	
9	SS1-3	2/12/24	SOIL		X	X										1	1	
10	SS1-4	2/12/24	SOIL						X							1		
			Total Counts	1	2	2			3							10	6	

Method of Shipment ☐ Courier (#) ☐ Hand Delivered ☐ Postal Name: Lewis Calinan Signature: Date: 3-12-24 Time:

Laboratory Use Only

Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date 3/12	Time 17:4	Temperature 13.5
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	Time	Report № 166792

CHAIN OF CUSTODY RECORD

Eurofins | Environment Testing ABN 50 005 085 521

☐ **Sydney Laboratory**
Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory**
Unit 1 21 Smallwood Place Murarrie QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ **Perth Laboratory**
Unit 2 91 Leach Highway Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory**
6 Monterey Road Dandenong South VIC 3175
03 8564 5000 EnviroSampleVic@eurofins.com

3

Company	Qualtest	**Project №**	NEW24P-0254	**Project Manager**	Emma Coleman
Address	2 Murray Dwyer Circuit NSW 2304	**Project Name**	DSI - Station Lane, Lochinvar	**EDD Format** (ESdat, EQuIS etc)	Excel
Contact Name	Emma Coleman				
Phone №					
Special Directions					
Purchase Order					
Quote ID №	180622QUAN-3				

Sampler(s)	Lewis Calinan				
Handed over by					
Email for Invoice	accounts@qualtest.com.au				
Email for Results	libbybetz@qualtest.com.au emmacoleman@qualtest.com.au billysnow@qualtest.com.au lewiscalinan@qualtest.com.au tomhall@qualtest.com.au				

Analyses (Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing)

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	OCPs	Metals(M8)	Asbestos (NEPM w/w%)	pH, CEC	Suite B4 (TRH, BTEX, PAH)	Suite B7 (TRH, BTEX, PAH, Metals)	Containers: 500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	SS1-5	2/12/24	SOIL			X			X							1	1	
2	SS1-6	2/12/24	SOIL			X			X							1	1	
3	SS1-7	2/12/24	SOIL						X							1	1	
4	SS1-8	2/12/24	SOIL													1	1	
5	SS1-9	2/12/24	SOIL		X	X										1	1	
6	SS1-10	2/12/24	SOIL						X							1	1	
7	SS1-11	2/12/24	SOIL			X										1	1	
8	SS2-1	2/12/24	SOIL		X	X										1	1	
9	SS2-2	2/12/24	SOIL		X	X										1	1	
10	SS2-3	2/12/24	SOIL		X	X										1	1	
	Total Counts				4	7			4							10	10	

Containers (Change container type & size if necessary.)

Required Turnaround Time (TAT) (Default will be 5 days if not ticked.)

♦Surcharge will apply
☐ Overnight (reporting by 9am)♦
☐ Same day♦ ☐ 1 day♦
☐ 2 days♦ ☐ 3 days♦
☑ 5 days (Standard)
☐ Other ( )

page 3/5

Method of Shipment: ☐ Courier (#) ☐ Hand Delivered ☐ Postal

	Name	Signature	Date	Time
	Lewis Calinan		3-12-24	

Laboratory Use Only

Received By	Yaratiana	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date 3/12	Time 12:40
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	Time

Temperature 13.5

Report № 116792

CHAIN OF CUSTODY RECORD

Eurofins | Environment Testing ABN 50 005 085 521

☐ **Sydney Laboratory** Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory** Unit 1 21 Smallwood Place Murarrie QLD 4172 07 3902 4600 EnviroSampleQLD@eurofins.com

☐ **Perth Laboratory** Unit 2 91 Leach Highway Kewdale WA 6105 08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory** 6 Monterey Road Dandenong South VIC 3175 03 8564 5000 EnviroSampleVic@eurofins.com

4

Company	Qualtest	**Project №**	NEW24P-0254	**Project Manager**	Emma Coleman
Address	2 Murray Dwyer Circuit NSW 2304	**Project Name**	DSI - Station Lane, Lochinvar	**EDD Format** ESdat, EQuIS etc	Excel
Contact Name	Emma Coleman				
Phone №					
Special Directions					
Purchase Order					
Quote ID №	180622QUAN-3				

Sampler(s)	Lewis Callinan	
Handed over by		
Email for Invoice	accounts@qualtest.com.au	
Email for Results	libbybelz@qualtest.com.au emmacoleman@qualtest.com.au billysnow@qualtest.com.au lewiscallinan@qualtest.com.au tomhall@qualtest.com.au	

Analyses Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	OCPs	Metals(M8)	Asbestos (NEPM w/w%)	pH, CEC	Suite B4 (TRH, BTEX, PAH)	Suite B7 (TRH, BTEX, PAH, Metals)	Containers: 500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	SS2-4	2/12/24	SOIL			X			X							1	1	
2	SS2-5	2/12/24	SOIL						X							1	1	
3	SS2-6	2/12/24	SOIL	X	X	X										1	1	
4	SS2-7	2/12/24	SOIL	X		X			X							1	1	
5	SS2-8	2/12/24	SOIL	X		X			X							1	1	
6	SS2-9	2/12/24	SOIL		X											1	1	
7	SS3-1	2/12/24	SOIL		X	X										1	1	
8	SS3-2	2/12/24	SOIL		X											1	1	
9	SS3-3	2/12/24	SOIL						X							1	1	
10	SS3-4	2/12/24	SOIL		X											1	1	
	Total Counts			3	5	5			5							10	10	

Containers Change container type & size if necessary.

Required Turnaround Time (TAT) Default will be 5 days if not ticked.

♦Surcharge will apply

- ☐ Overnight (reporting by 9am)♦
- ☐ Same day♦ ☐ 1 day♦
- ☐ 2 days♦ ☐ 3 days♦
- ☑ 5 days (Standard)
- ☐ Other( )

Method of Shipment ☐ Courier (#) ☐ Hand Delivered ☐ Postal Name: Lewis Callinan Signature: Date: 3-12-24 Time:

Laboratory Use Only

Received By	Yvonne	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date 3/12	Time 12:4	Temperature 13.5
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature		Date	Time	Report № 1166792

CHAIN OF CUSTODY RECORD

Eurofins | Environment Testing ABN 50 005 085 521

☐ **Sydney Laboratory** Unit F3 Bld.F 16 Mars Road Lane Cove West NSW 2066 02 9900 8400 EnviroSampleNSW@eurofins.com

☐ **Brisbane Laboratory** Unit 1 21 Smallwood Place Murarrie QLD 4172 07 3902 4600 EnviroSampleQLD@eurofins.com

☐ **Perth Laboratory** Unit 2 91 Leach Highway Kewdale WA 6105 08 9251 9600 EnviroSampleWA@eurofins.com

☐ **Melbourne Laboratory** 6 Monterey Road Dandenong South VIC 3175 03 8564 5000 EnviroSampleVic@eurofins.com

5.

Company	Qualtest
Address	2 Murray Dwyer Circuit NSW 2304
Contact Name	Emma Coleman
Phone №	
Special Directions	
Purchase Order	
Quote ID №	180622QUAN-3
Project №	NEW24P-0254
Project Name	DSI - Station Lane, Lochinvar
Project Manager	Emma Coleman
EDD Format (ESdat, EQuIS etc)	Excel
Sampler(s)	Lewis Calinan
Handed over by	
Email for Invoice	accounts@qualtest.com.au
Email for Results	libbybetz@qualtest.com.au emmacoleman@qualtest.com.au billysnow@qualtest.com.au lewiscallinan@qualtest.com.au tomhall@qualtest.com.au

Analyses: Where metals are requested, please specify "Total" or "Filtered". SUITE code must be used to attract SUITE pricing.

Containers: Change container type & size if necessary.

№	Client Sample ID	Sampled Date/Time dd/mm/yy hh:mm	Matrix Solid (S) Water (W)	OCPs	Metals(M8)	Asbestos (NEPM w/w%)	pH, CEC	Suite B4 (TRH, BTEX, PAH)	Suite B7 (TRH, BTEX, PAH, Metals)	Asbestos ID	500mL Plastic	250mL Plastic	125mL Plastic	200mL Amber Glass	40mL VOA vial	500mL PFAS Bottle	Jar (Glass or HDPE)	Other (Asbestos AS4964, WA Guidelines)	Sample Comments / Dangerous Goods Hazard Warning
1	SS3-5	2/12/24	SOIL														1	1	
2	SS3-6	2/12/24	SOIL		X												1	1	
3	SS3-7	2/12/24	SOIL		X												1	1	
4	ASB1	2/12/24	SOIL							X								1	
5	D.2.12.24	2/12/24	SOIL														1		
6	T.2.12.24	2/12/24	SOIL														1		
7	D1.2.12.24	2/12/24	SOIL						X								1		
8																			
9																			
10																			
	Total Counts				2				1	1							6	4	page 5/5

Required Turnaround Time (TAT) Default will be 5 days if not ticked.

♦Surcharge will apply

- ☐ Overnight (reporting by 9am)♦
- ☐ Same day♦
- ☐ 1 day♦
- ☐ 2 days♦
- ☐ 3 days♦
- ☑ 5 days (Standard)
- ☐ Other( )

Method of Shipment: ☐ Courier (#) ☐ Hand Delivered ☐ Postal Name: Lewis Calinan Signature: [signature] Date: 3-12-24 Time:

Laboratory Use Only							
Received By	Y Matos	SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature [signature]	Date 3/12	Time 12:40	Temperature	13.5
Received By		SYD | BNE | MEL | PER | ADL | NTL | DRW	Signature	Date	Time	Report №	1166792

eurofins | Environment Testing

www.eurofinsanz.com EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370 & 2554

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Sample Receipt Advice

Company name: Qualtest
Contact name: Emma Coleman
Project name: DSI - STATION LANE LOCHINVAR
Project ID: NEW24P-0254
Turnaround time: 5 Day
Date/Time received Dec 3, 2024 12:40 PM
Eurofins reference 1166792

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Extra samples provided (BH05 0.1-0.2), sample on hold. Missing bag for BH07 0.5-0.6. (Email received - disregard above samples).

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Andrew Black on phone : (+61) 2 9900 8490 or by email: Andrew.Black@eurofinsanz.com

Results will be delivered electronically via email to Emma Coleman - emmacoleman@qualtest.com.au.

Note: A copy of these results will also be delivered to the general Qualtest email address.

Certificate of Analysis

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NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Qualtest
2 Murray Dwyer Circuit
Mayfield West
NSW 2304

Attention:	Emma Coleman
Report	1166792-AID
Project Name	DSI - STATION LANE LOCHINVAR
Project ID	NEW24P-0254
Received Date	Dec 03, 2024
Date Reported	Dec 11, 2024

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004 and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Man-made vitreous fibre (MMVF)	Fibres exhibiting isotropic characteristics, including glass fibres, glass wool, rock wool, slag wool, ceramic fibres and bio-soluble fibres. NOTE: previously known as "synthetic mineral fibre" (SMF). Simple analytical procedures such as polarised light microscopy cannot detect or reliably identify asbestos in some types of commercial products containing asbestos, either because the fibres are below the resolution of optical microscopy or because the matrix material adheres too strongly to the fibres. For these types of products, electron microscopy may be necessary.
Subsampling Soil Samples	The sample submitted is dried and passed through a 10 mm sieve followed by a 2 mm sieve. All fibrous matter greater than 10 mm and greater than 2 mm and the material passing through the 2 mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 g to 60 g, then a subsampling routine based on ISO 3082:2017(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be subsampled for trace analysis, in accordance with AS 5370:2024*.*
Bonded asbestos-containing material (ACM)	The material is first examined, and any fibres are isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 5370:2024*. *NOTE: Even after disintegration, it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting (LOR)	The performance limitation of the AS 5370:2024* method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory limit of reporting, per se. Examination of large sample size (e.g., 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 5370:2024*, and hence, NATA Accreditation does not cover the performance of this service (non-NATA results are shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964-2004: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name DSI - STATION LANE LOCHINVAR
Project ID NEW24P-0254
Date Sampled Dec 02, 2024
Report 1166792-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH01 0.0-0.1	24-De0004138	Dec 02, 2024	Approximate Sample 449g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS1-1	24-De0004140	Dec 02, 2024	Approximate Sample 560g Sample consisted of: Brown coarse-grained clayey sandy soil, brick and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS1-3	24-De0004142	Dec 02, 2024	Approximate Sample 535g Sample consisted of: Brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS1-5	24-De0004144	Dec 02, 2024	Approximate Sample 371g Sample consisted of: Brown fine-grained clayey soil, cement and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS1-6	24-De0004145	Dec 02, 2024	Approximate Sample 335g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS1-9	24-De0004147	Dec 02, 2024	Approximate Sample 396g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS1-11	24-De0004149	Dec 02, 2024	Approximate Sample 438g Sample consisted of: Brown fine-grained clayey soil, brick and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS2-1	24-De0004150	Dec 02, 2024	Approximate Sample 455g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
SS2-2	24-De0004151	Dec 02, 2024	Approximate Sample 720g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS2-3	24-De0004152	Dec 02, 2024	Approximate Sample 503g Sample consisted of: Brown fine-grained clayey soil, cement and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS2-4	24-De0004153	Dec 02, 2024	Approximate Sample 444g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS2-6	24-De0004155	Dec 02, 2024	Approximate Sample 464g Sample consisted of: Brown coarse-grained sandy soil, coal and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS2-7	24-De0004156	Dec 02, 2024	Approximate Sample 344g Sample consisted of: Brown fine-grained clayey soil, coal, debris and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS2-8	24-De0004157	Dec 02, 2024	Approximate Sample 442g Sample consisted of: Brown coarse-grained clayeysandy soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
SS3-1	24-De0004159	Dec 02, 2024	Approximate Sample 331g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No trace asbestos detected.
ASB1	24-De0004191	Dec 02, 2024	Approximate Sample 86g / 105 x 80 x 10mm Sample consisted of: Grey fibre cement fragment	Chrysotile asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Dec 03, 2024	Indefinite
Asbestos - LTM-ASB-8020	Newcastle	Dec 03, 2024	Indefinite

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Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	1/21 Smallwood Place Murarrie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794 & 2780	1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079

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Eurofins Environment Testing NZ Ltd
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Company Name: Qualtest
Address: 2 Murray Dwyer Circuit
Mayfield West
NSW 2304

Project Name: DSI - STATION LANE LOCHINVAR
Project ID: NEW24P-0254

Order No.:
Report #: 1166792
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Dec 3, 2024 12:40 PM
Due: Dec 10, 2024
Priority: 5 Day
Contact Name: Emma Coleman

Eurofins Analytical Services Manager : Andrew Black

Sample Detail	Asbestos - WA guidelines	Asbestos Absence /Presence*	CANCELLED*	HOLD*	pH (1:5 Aqueous extract at 25 °C as rec.)	Organochlorine Pesticides	Organochlorine Pesticides	Metals M8	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B7
Melbourne Laboratory - NATA # 1261 Site # 1254					X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA # 1261 Site # 18217	X		X	X		X	X	X	X	X		X	X
Mayfield West Laboratory - NATA # 1261 Site # 25079		X											
External Laboratory													

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID											
1	BH01 0.0-0.1	Dec 02, 2024		Soil	N24-De0004138	X				X	X			X		X	X	
2	BH06 0.15-0.25	Dec 02, 2024		Soil	N24-De0004139							X			X			X
3	SS1-1	Dec 02, 2024		Soil	N24-De0004140	X									X			X
4	SS1-2	Dec 02, 2024		Soil	N24-De0004141								X		X			
5	SS1-3	Dec 02, 2024		Soil	N24-De0004142	X							X		X			
6	SS1-4	Dec 02, 2024		Soil	N24-De0004143										X			X
7	SS1-5	Dec 02, 2024		Soil	N24-De0004144	X									X			X
8	SS1-6	Dec 02, 2024		Soil	N24-De0004145	X									X			X
9	SS1-7	Dec 02, 2024		Soil	N24-De0004146										X			X
10	SS1-9	Dec 02, 2024		Soil	N24-De0004147	X							X		X			
11	SS1-10	Dec 02, 2024		Soil	N24-De0004148										X			X

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Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

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35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402

Company Name: Qualtest
Address: 2 Murray Dwyer Circuit
Mayfield West
NSW 2304

Project Name: DSI - STATION LANE LOCHINVAR
Project ID: NEW24P-0254

Order No.:
Report #: 1166792
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Dec 3, 2024 12:40 PM
Due: Dec 10, 2024
Priority: 5 Day
Contact Name: Emma Coleman

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence*	CANCELLED*	HOLD*	pH (1:5 Aqueous extract at 25 °C as rec.)	Organochlorine Pesticides	Organochlorine Pesticides	Metals M8	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B7
Melbourne Laboratory - NATA # 1261 Site # 1254										X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA # 1261 Site # 18217						X		X	X		X	X	X	X	X		X	X
Mayfield West Laboratory - NATA # 1261 Site # 25079							X											
12	SS1-11	Dec 02, 2024		Soil	N24-De0004149	X												
13	SS2-1	Dec 02, 2024		Soil	N24-De0004150	X							X		X			
14	SS2-2	Dec 02, 2024		Soil	N24-De0004151	X							X		X			
15	SS2-3	Dec 02, 2024		Soil	N24-De0004152	X							X		X			
16	SS2-4	Dec 02, 2024		Soil	N24-De0004153	X									X			X
17	SS2-5	Dec 02, 2024		Soil	N24-De0004154										X			X
18	SS2-6	Dec 02, 2024		Soil	N24-De0004155	X						X	X		X			
19	SS2-7	Dec 02, 2024		Soil	N24-De0004156	X						X			X			X
20	SS2-8	Dec 02, 2024		Soil	N24-De0004157	X						X			X			X
21	SS2-9	Dec 02, 2024		Soil	N24-De0004158								X		X			
22	SS3-1	Dec 02, 2024		Soil	N24-De0004159	X							X		X			
23	SS3-2	Dec 02, 2024		Soil	N24-De0004160								X		X			
24	SS3-3	Dec 02, 2024		Soil	N24-De0004161										X			X
25	SS3-4	Dec 02, 2024		Soil	N24-De0004162								X		X			
26	SS3-6	Dec 02, 2024		Soil	N24-De0004163								X		X			

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Company Name: Qualtest
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Project Name: DSI - STATION LANE LOCHINVAR
Project ID: NEW24P-0254

Order No.:
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Phone: 02 4968 4468
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Received: Dec 3, 2024 12:40 PM
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Contact Name: Emma Coleman

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence*	CANCELLED*	HOLD*	pH (1:5 Aqueous extract at 25 °C as rec.)	Organochlorine Pesticides	Organochlorine Pesticides	Metals M8	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B7
Melbourne Laboratory - NATA # 1261 Site # 1254										X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA # 1261 Site # 18217						X		X	X		X	X	X	X	X		X	X
Mayfield West Laboratory - NATA # 1261 Site # 25079							X											
27	SS3-7	Dec 02, 2024		Soil	N24-De0004164								X		X			
28	D1.2.12.24	Dec 02, 2024		Soil	N24-De0004165										X			X
29	BH01 0.5-0.6	Dec 02, 2024		Soil	N24-De0004166				X									
30	BH01 0.9-1.0	Dec 02, 2024		Soil	N24-De0004167				X									
31	BH01 1.15-1.25	Dec 02, 2024		Soil	N24-De0004168				X									
32	BH02 0.0-0.1	Dec 02, 2024		Soil	N24-De0004169				X									
33	BH02 0.5-0.6	Dec 02, 2024		Soil	N24-De0004170				X									
34	BH02 0.8-0.9	Dec 02, 2024		Soil	N24-De0004171				X									
35	BH03 0.0-0.1	Dec 02, 2024		Soil	N24-De0004172				X									
36	BH03 0.4-0.5	Dec 02, 2024		Soil	N24-De0004173				X									
37	BH04 0.0-0.1	Dec 02, 2024		Soil	N24-De0004174				X									
38	BH05 0.0-0.1	Dec 02, 2024		Soil	N24-De0004175				X									
39	BH06 0.0-0.15	Dec 02, 2024		Soil	N24-De0004176				X									
40	BH07 0.0-0.1	Dec 02, 2024		Soil	N24-De0004177				X									

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Melbourne Laboratory - NATA # 1261 Site # 1254										X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA # 1261 Site # 18217						X		X	X		X	X	X	X	X		X	X
Mayfield West Laboratory - NATA # 1261 Site # 25079							X											
41	BH07 0.5-0.6	Dec 02, 2024		Soil	N24-De0004178				X									
42	SS1-8	Dec 02, 2024		Soil	N24-De0004179				X									
43	SS3-5	Dec 02, 2024		Soil	N24-De0004180				X									
44	T.2.12.24	Dec 02, 2024		Soil	N24-De0004181				X									
45	ASB1	Dec 02, 2024		Building Materials	N24-De0004191		X											
46	BH03 0.5-0.6	Dec 02, 2024		Soil	N24-De0004232				X									
47	D.2.12.24	Dec 02, 2024		Soil	N24-De0004233				X									
48	BH05 0.1-0.2	Dec 02, 2024		Soil	N24-De0004234			X										
Test Counts						15	1	1	18	1	5	5	13	27	27	1	14	14

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V** = **r** x **t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_x}{x}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix may be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (**P_A**). This estimate is not NATA-accredited.
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to “non-bonded / friable”.
AFM	Airborne Fibre Monitoring, e.g., by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total %w/w asbestos content in asbestos-containing finds in a soil sample (**% w/w)**.
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004..
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004..
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos-containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to distinguish visibly and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004.. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess the degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021), ISBN: 9780616667079.
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012), .ISBN: 9780717665020
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
MMVF	Man-Made Vitreous Fibre - exhibiting isotropic characteristics, including glass fibres, glass wool, rock wool, slag wool, ceramic fibres and “bio-soluble fibres. NOTE: previously known as “synthetic mineral fibre” (SMF).
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004..
PCM	Phase Contrast Microscopy. This is used for fibre counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004..
Sampling	Unless otherwise stated, Eurofins are not responsible for sampling equipment or the sampling process.
SRA	Sample Receipt Advice.
Trace Analysis	An analytical procedure is used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according to AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004.. It may include (but is not limited to) actinolite, anthophyllite, or tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average %w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (**$\%_{WA}$**).

Comments

24-De0004138, 24-De0004144, 24-De0004145, 24-De0004147, 24-De0004149, 24-De0004150, 24-De0004153, 24-De0004155, 24-De0004156, 24-De0004157, 24-De0004159 Samples received were less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Laxman Dias	Senior Analyst-Asbestos
Anita Weinberg	Senior Analyst-Asbestos

Authorised by:

Sayeed Abu	Senior Analyst-Asbestos
Bryce Keegan	Senior Analyst-Asbestos

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Qualtest
2 Murray Dwyer Circuit
Mayfield West
NSW 2304

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
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Attention: **Emma Coleman**

Report **1166792-S**
Project name DSI - STATION LANE LOCHINVAR
Project ID NEW24P-0254
Received Date Dec 03, 2024

Client Sample ID			**BH01 0.0-0.1**	**BH06 0.15-0.25**	**SS1-1**	**SS1-2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**N24-De0004138**	**N24-De0004139**	**N24-De0004140**	**N24-De0004141**
Date Sampled			**Dec 02, 2024**	**Dec 02, 2024**	**Dec 02, 2024**	**Dec 02, 2024**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	68	91	91	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	< 50	< 50	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-

Client Sample ID			BH01 0.0-0.1	BH06 0.15-0.25	SS1-1	SS1-2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004138	N24-De0004139	N24-De0004140	N24-De0004141
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	115	90	85	-
p-Terphenyl-d14 (surr.)	1	%	72	105	84	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	-	-
a-HCH	0.05	mg/kg	< 0.05	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
b-HCH	0.05	mg/kg	< 0.05	< 0.05	-	-
d-HCH	0.05	mg/kg	< 0.05	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	-	-
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	-	-
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	-	-
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	-	-
Dibutylchlorendate (surr.)	1	%	83	103	-	-
Tetrachloro-m-xylene (surr.)	1	%	112	98	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	-
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	43	-	-	-
pH (1:5 Aqueous extract at 25 °C as rec.)	0.1	pH Units	7.6	-	-	-
Heavy Metals						
Arsenic	2	mg/kg	3.3	2.0	11	3.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	66	53	30	30
Copper	5	mg/kg	20	18	20	16
Lead	5	mg/kg	62	7.7	81	61

Client Sample ID			BH01 0.0-0.1	BH06 0.15-0.25	SS1-1	SS1-2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004138	N24-De0004139	N24-De0004140	N24-De0004141
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.1	mg/kg	0.4	< 0.1	0.2	0.2
Nickel	5	mg/kg	32	49	22	22
Zinc	5	mg/kg	33	33	85	81
Cation Exchange Capacity						
Cation Exchange Capacity	0.5	meq/100g	33	-	-	-
Sample Properties						
% Moisture	1	%	23	17	14	11

Client Sample ID			SS1-3	SS1-4	SS1-5	SS1-6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004142	N24-De0004143	N24-De0004144	N24-De0004145
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	-	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	-	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	-	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	-	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	-	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	109	89	109
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	-	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	-	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5

Client Sample ID			SS1-3	SS1-4	SS1-5	SS1-6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004142	N24-De0004143	N24-De0004144	N24-De0004145
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluoranthene	0.5	mg/kg	-	< 0.5	1.2	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	< 0.5	0.7	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5	1.1	< 0.5
Total PAH*	0.5	mg/kg	-	< 0.5	3.0	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	87	89	102
p-Terphenyl-d14 (surr.)	1	%	-	92	91	101
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	-	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	-	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	-	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	< 100
Heavy Metals						
Arsenic	2	mg/kg	5.4	4.1	5.0	3.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	46	34	43	41
Copper	5	mg/kg	24	20	24	32
Lead	5	mg/kg	75	120	40	160
Mercury	0.1	mg/kg	0.1	0.6	0.2	1.2
Nickel	5	mg/kg	29	20	33	41
Zinc	5	mg/kg	82	190	100	120
Sample Properties						
% Moisture	1	%	26	20	31	22

Client Sample ID			SS1-7	SS1-9	SS1-10	SS2-1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004146	N24-De0004147	N24-De0004148	N24-De0004150
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	< 50	-
TRH C29-C36	50	mg/kg	< 50	-	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 50	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	107	-	113	-

Client Sample ID			SS1-7	SS1-9	SS1-10	SS2-1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004146	N24-De0004147	N24-De0004148	N24-De0004150
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	< 50	-	< 50	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	0.7	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	0.7	-	< 0.5	-
Total PAH*	0.5	mg/kg	1.4	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	121	-	102	-
p-Terphenyl-d14 (surr.)	1	%	92	-	93	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	-
Heavy Metals						
Arsenic	2	mg/kg	4.2	3.9	3.6	7.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	40	34	37	58
Copper	5	mg/kg	31	27	26	33
Lead	5	mg/kg	81	35	160	130
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.8	0.2
Nickel	5	mg/kg	41	35	26	26
Zinc	5	mg/kg	280	110	110	200
Sample Properties						
% Moisture	1	%	11	14	26	33

Client Sample ID			SS2-2	SS2-3	SS2-4	SS2-5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004151	N24-De0004152	N24-De0004153	N24-De0004154
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	< 50	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	-	-	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	86	91
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	-	-	< 50	< 50
TRH C6-C10	20	mg/kg	-	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	1.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	-	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	133	74
p-Terphenyl-d14 (surr.)	1	%	-	-	99	74
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	-	-	< 50	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	< 100

Client Sample ID			SS2-2	SS2-3	SS2-4	SS2-5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004151	N24-De0004152	N24-De0004153	N24-De0004154
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	5.5	3.7	3.0	3.9
Cadmium	0.4	mg/kg	< 0.4	< 0.4	0.4	< 0.4
Chromium	5	mg/kg	20	39	34	34
Copper	5	mg/kg	16	29	20	30
Lead	5	mg/kg	63	58	42	150
Mercury	0.1	mg/kg	0.2	< 0.1	< 0.1	0.4
Nickel	5	mg/kg	9.5	23	22	21
Zinc	5	mg/kg	120	340	470	190
Sample Properties						
% Moisture	1	%	5.3	16	19	20

Client Sample ID			SS2-6	SS2-7	SS2-8	SS2-9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004155	N24-De0004156	N24-De0004157	N24-De0004158
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	-
TRH C10-C14	20	mg/kg	-	< 20	< 20	-
TRH C15-C28	50	mg/kg	-	< 50	< 50	-
TRH C29-C36	50	mg/kg	-	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	-	< 50	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	-
Xylenes - Total*	0.3	mg/kg	-	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	81	96	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	-
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	-	< 50	< 50	-
TRH C6-C10	20	mg/kg	-	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	-
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-

Client Sample ID			SS2-6	SS2-7	SS2-8	SS2-9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004155	N24-De0004156	N24-De0004157	N24-De0004158
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	-	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	95	91	-
p-Terphenyl-d14 (surr.)	1	%	-	101	102	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	0.24	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	0.24	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	0.24	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Dibutylchlorendate (surr.)	1	%	100	119	118	-
Tetrachloro-m-xylene (surr.)	1	%	99	100	96	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	-	< 50	< 50	-
TRH >C16-C34	100	mg/kg	-	< 100	< 100	-
TRH >C34-C40	100	mg/kg	-	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	-
Heavy Metals						
Arsenic	2	mg/kg	4.9	97	6.1	4.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	60	110	43	52
Copper	5	mg/kg	26	110	27	30

Client Sample ID			SS2-6	SS2-7	SS2-8	SS2-9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004155	N24-De0004156	N24-De0004157	N24-De0004158
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	5	mg/kg	130	520	150	310
Mercury	0.1	mg/kg	0.2	0.5	0.3	< 0.1
Nickel	5	mg/kg	38	38	26	33
Zinc	5	mg/kg	250	390	140	260
Sample Properties						
% Moisture	1	%	24	21	22	27

Client Sample ID			SS3-1	SS3-2	SS3-3	SS3-4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004159	N24-De0004160	N24-De0004161	N24-De0004162
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-C36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	82	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5	-
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	-	-	< 50	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			SS3-1	SS3-2	SS3-3	SS3-4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N24-De0004159	N24-De0004160	N24-De0004161	N24-De0004162
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Total PAH*	0.5	mg/kg	-	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	-	95	-
p-Terphenyl-d14 (surr.)	1	%	-	-	112	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Heavy Metals						
Arsenic	2	mg/kg	2.7	6.6	6.1	4.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	69	73	51	45
Copper	5	mg/kg	21	34	24	16
Lead	5	mg/kg	14	170	31	18
Mercury	0.1	mg/kg	< 0.1	0.2	< 0.1	< 0.1
Nickel	5	mg/kg	63	47	30	28
Zinc	5	mg/kg	61	94	140	50
Sample Properties						
% Moisture	1	%	21	16	19	24

Client Sample ID			SS3-6	SS3-7	D1.2.12.24
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			N24-De0004163	N24-De0004164	N24-De0004165
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	< 50
TRH C29-C36	50	mg/kg	-	-	< 50
TRH C10-C36 (Total)	50	mg/kg	-	-	< 50
BTEX					
Benzene	0.1	mg/kg	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1
Xylenes - Total*	0.3	mg/kg	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	99

Client Sample ID			SS3-6	SS3-7	D1.2.12.24
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			N24-De0004163	N24-De0004164	N24-De0004165
Date Sampled			Dec 02, 2024	Dec 02, 2024	Dec 02, 2024
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5
TRH >C10-C16 less Naphthalene (F2)*[N01]	50	mg/kg	-	-	< 50
TRH C6-C10	20	mg/kg	-	-	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	-	< 20
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	< 0.5
Total PAH*	0.5	mg/kg	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	71
p-Terphenyl-d14 (surr.)	1	%	-	-	99
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	50	mg/kg	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100
Heavy Metals					
Arsenic	2	mg/kg	3.4	5.0	12
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	21	72	33
Copper	5	mg/kg	13	30	20
Lead	5	mg/kg	24	53	79
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.2
Nickel	5	mg/kg	13	47	24
Zinc	5	mg/kg	73	87	86
Sample Properties					
% Moisture	1	%	6.8	18	14

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Dec 05, 2024	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Dec 05, 2024	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Dec 05, 2024	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Dec 05, 2024	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Dec 05, 2024	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Sydney	Dec 05, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Organochlorine Pesticides	Sydney	Dec 05, 2024	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
pH (1:5 Aqueous extract at 25 °C as rec.)	Melbourne	Dec 04, 2024	7 Days
- Method: LTM-GEN-7090 pH in soil by ISE			
Conductivity (1:5 aqueous extract at 25 °C as rec.)	Melbourne	Dec 04, 2024	7 Days
- Method: LTM-INO-4030 Conductivity			
Cation Exchange Capacity	Melbourne	Dec 05, 2024	28 Days
- Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage			
% Moisture	Sydney	Dec 03, 2024	14 Days
- Method: LTM-GEN-7080 Moisture			

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Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794 & 2780	Site# 25079

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IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Qualtest
Address: 2 Murray Dwyer Circuit
Mayfield West
NSW 2304

Project Name: DSI - STATION LANE LOCHINVAR
Project ID: NEW24P-0254

Order No.:
Report #: 1166792
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Dec 3, 2024 12:40 PM
Due: Dec 10, 2024
Priority: 5 Day
Contact Name: Emma Coleman

Eurofins Analytical Services Manager : Andrew Black

Sample Detail	Asbestos - WA guidelines	Asbestos Absence /Presence*	CANCELLED*	HOLD*	pH (1:5 Aqueous extract at 25 °C as rec.)	Organochlorine Pesticides	Organochlorine Pesticides	Metals M8	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B7
Melbourne Laboratory - NATA # 1261 Site # 1254					X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA # 1261 Site # 18217	X		X	X		X	X	X	X	X		X	X
Mayfield West Laboratory - NATA # 1261 Site # 25079		X											
External Laboratory													

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID												
1	BH01 0.0-0.1	Dec 02, 2024		Soil	N24-De0004138	X				X	X			X		X	X	
2	BH06 0.15-0.25	Dec 02, 2024		Soil	N24-De0004139							X			X			X
3	SS1-1	Dec 02, 2024		Soil	N24-De0004140	X									X			X
4	SS1-2	Dec 02, 2024		Soil	N24-De0004141								X		X			
5	SS1-3	Dec 02, 2024		Soil	N24-De0004142	X							X		X			
6	SS1-4	Dec 02, 2024		Soil	N24-De0004143										X			X
7	SS1-5	Dec 02, 2024		Soil	N24-De0004144	X									X			X
8	SS1-6	Dec 02, 2024		Soil	N24-De0004145	X									X			X
9	SS1-7	Dec 02, 2024		Soil	N24-De0004146										X			X
10	SS1-9	Dec 02, 2024		Soil	N24-De0004147	X							X		X			
11	SS1-10	Dec 02, 2024		Soil	N24-De0004148										X			X

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Company Name: Qualtest
Address: 2 Murray Dwyer Circuit
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NSW 2304

Project Name: DSI - STATION LANE LOCHINVAR
Project ID: NEW24P-0254

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Phone: 02 4968 4468
Fax: 02 4960 9775

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Due: Dec 10, 2024
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Contact Name: Emma Coleman

Eurofins Analytical Services Manager : Andrew Black

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Melbourne Laboratory - NATA # 1261 Site # 1254										X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA # 1261 Site # 18217						X		X	X		X	X	X	X	X		X	X
Mayfield West Laboratory - NATA # 1261 Site # 25079							X											
12	SS1-11	Dec 02, 2024		Soil	N24-De0004149	X												
13	SS2-1	Dec 02, 2024		Soil	N24-De0004150	X							X		X			
14	SS2-2	Dec 02, 2024		Soil	N24-De0004151	X							X		X			
15	SS2-3	Dec 02, 2024		Soil	N24-De0004152	X							X		X			
16	SS2-4	Dec 02, 2024		Soil	N24-De0004153	X									X			X
17	SS2-5	Dec 02, 2024		Soil	N24-De0004154										X			X
18	SS2-6	Dec 02, 2024		Soil	N24-De0004155	X						X	X		X			
19	SS2-7	Dec 02, 2024		Soil	N24-De0004156	X						X			X			X
20	SS2-8	Dec 02, 2024		Soil	N24-De0004157	X						X			X			X
21	SS2-9	Dec 02, 2024		Soil	N24-De0004158								X		X			
22	SS3-1	Dec 02, 2024		Soil	N24-De0004159	X							X		X			
23	SS3-2	Dec 02, 2024		Soil	N24-De0004160								X		X			
24	SS3-3	Dec 02, 2024		Soil	N24-De0004161										X			X
25	SS3-4	Dec 02, 2024		Soil	N24-De0004162								X		X			
26	SS3-6	Dec 02, 2024		Soil	N24-De0004163								X		X			

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Company Name: Qualtest
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Project Name: DSI - STATION LANE LOCHINVAR
Project ID: NEW24P-0254

Order No.:
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Phone: 02 4968 4468
Fax: 02 4960 9775

Received: Dec 3, 2024 12:40 PM
Due: Dec 10, 2024
Priority: 5 Day
Contact Name: Emma Coleman

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - WA guidelines	Asbestos Absence /Presence*	CANCELLED*	HOLD*	pH (1:5 Aqueous extract at 25 °C as rec.)	Organochlorine Pesticides	Organochlorine Pesticides	Metals M8	Moisture Set	Moisture Set	Cation Exchange Capacity	Eurofins Suite B7	Eurofins Suite B7
Melbourne Laboratory - NATA # 1261 Site # 1254										X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA # 1261 Site # 18217						X		X	X		X	X	X	X	X		X	X
Mayfield West Laboratory - NATA # 1261 Site # 25079							X											
27	SS3-7	Dec 02, 2024		Soil	N24-De0004164								X		X			
28	D1.2.12.24	Dec 02, 2024		Soil	N24-De0004165										X			X
29	BH01 0.5-0.6	Dec 02, 2024		Soil	N24-De0004166				X									
30	BH01 0.9-1.0	Dec 02, 2024		Soil	N24-De0004167				X									
31	BH01 1.15-1.25	Dec 02, 2024		Soil	N24-De0004168				X									
32	BH02 0.0-0.1	Dec 02, 2024		Soil	N24-De0004169				X									
33	BH02 0.5-0.6	Dec 02, 2024		Soil	N24-De0004170				X									
34	BH02 0.8-0.9	Dec 02, 2024		Soil	N24-De0004171				X									
35	BH03 0.0-0.1	Dec 02, 2024		Soil	N24-De0004172				X									
36	BH03 0.4-0.5	Dec 02, 2024		Soil	N24-De0004173				X									
37	BH04 0.0-0.1	Dec 02, 2024		Soil	N24-De0004174				X									
38	BH05 0.0-0.1	Dec 02, 2024		Soil	N24-De0004175				X									
39	BH06 0.0-0.15	Dec 02, 2024		Soil	N24-De0004176				X									
40	BH07 0.0-0.1	Dec 02, 2024		Soil	N24-De0004177				X									

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Melbourne Laboratory - NATA # 1261 Site # 1254										X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA # 1261 Site # 18217						X		X	X		X	X	X	X	X		X	X
Mayfield West Laboratory - NATA # 1261 Site # 25079							X											
41	BH07 0.5-0.6	Dec 02, 2024		Soil	N24-De0004178				X									
42	SS1-8	Dec 02, 2024		Soil	N24-De0004179				X									
43	SS3-5	Dec 02, 2024		Soil	N24-De0004180				X									
44	T.2.12.24	Dec 02, 2024		Soil	N24-De0004181				X									
45	ASB1	Dec 02, 2024		Building Materials	N24-De0004191		X											
46	BH03 0.5-0.6	Dec 02, 2024		Soil	N24-De0004232				X									
47	D.2.12.24	Dec 02, 2024		Soil	N24-De0004233				X									
48	BH05 0.1-0.2	Dec 02, 2024		Soil	N24-De0004234			X										
Test Counts						15	1	1	18	1	5	5	13	27	27	1	14	14

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Conductivity (1:5 aqueous extract at 25 °C as rec.)	uS/cm	< 10			10	Pass	
Method Blank							
Cation Exchange Capacity							
Cation Exchange Capacity	meq/100g	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
LCS - % Recovery							
Conductivity (1:5 aqueous extract at 25 °C as rec.)	%	97			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	96			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	87			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	96			70-130	Pass	
m&p-Xylenes	%	100			70-130	Pass	
Xylenes - Total*	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	92			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C6-C10	%	96			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
a-HCH	%	94			70-130	Pass	
g-HCH (Lindane)	%	82			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	101			80-120	Pass	
Cadmium	%	106			80-120	Pass	
Chromium	%	105			80-120	Pass	
Copper	%	107			80-120	Pass	
Lead	%	104			80-120	Pass	
Mercury	%	106			80-120	Pass	
Nickel	%	105			80-120	Pass	
Zinc	%	108			80-120	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	%	87			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	81			70-130	Pass	
Acenaphthylene	%	101			70-130	Pass	
Anthracene	%	98			70-130	Pass	
Benz(a)anthracene	%	92			70-130	Pass	
Benzo(a)pyrene	%	96			70-130	Pass	
Benzo(b&j)fluoranthene	%	99			70-130	Pass	
Benzo(g.h.i)perylene	%	76			70-130	Pass	
Benzo(k)fluoranthene	%	91			70-130	Pass	
Chrysene	%	95			70-130	Pass	
Dibenz(a.h)anthracene	%	99			70-130	Pass	
Fluoranthene	%	93			70-130	Pass	
Fluorene	%	88			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	96			70-130	Pass	
Naphthalene	%	90			70-130	Pass	
Phenanthrene	%	98			70-130	Pass	
Pyrene	%	96			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	90			70-130	Pass	
4.4'-DDD	%	101			70-130	Pass	
4.4'-DDE	%	91			70-130	Pass	
4.4'-DDT	%	102			70-130	Pass	
Aldrin	%	87			70-130	Pass	
b-HCH	%	93			70-130	Pass	
d-HCH	%	91			70-130	Pass	
Dieldrin	%	88			70-130	Pass	
Endosulfan I	%	99			70-130	Pass	
Endosulfan II	%	92			70-130	Pass	
Endosulfan sulphate	%	81			70-130	Pass	
Endrin	%	98			70-130	Pass	
Endrin aldehyde	%	78			70-130	Pass	
Endrin ketone	%	98			70-130	Pass	
Heptachlor	%	94			70-130	Pass	
Heptachlor epoxide	%	84			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Hexachlorobenzene			%	90			70-130	Pass	
Methoxychlor			%	118			70-130	Pass	
LCS - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions									
TRH >C10-C16			%	83			70-130	Pass	
LCS - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions									
TRH C10-C14			%	110			70-130	Pass	
LCS - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions									
TRH >C10-C16			%	103			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S24-No0084531	NCP	%	86			70-130	Pass	
TRH C10-C14	S24-No0085446	NCP	%	92			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S24-No0084531	NCP	%	85			70-130	Pass	
Toluene	S24-No0084531	NCP	%	91			70-130	Pass	
Ethylbenzene	S24-No0084531	NCP	%	90			70-130	Pass	
m&p-Xylenes	S24-No0084531	NCP	%	93			70-130	Pass	
o-Xylene	S24-No0084531	NCP	%	90			70-130	Pass	
Xylenes - Total*	S24-No0084531	NCP	%	92			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S24-No0084531	NCP	%	85			70-130	Pass	
TRH C6-C10	S24-No0084531	NCP	%	88			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S24-De0004894	NCP	%	80			70-130	Pass	
Acenaphthylene	S24-De0004894	NCP	%	79			70-130	Pass	
Anthracene	S24-De0004894	NCP	%	95			70-130	Pass	
Benz(a)anthracene	S24-De0004894	NCP	%	79			70-130	Pass	
Benzo(a)pyrene	S24-De0004894	NCP	%	100			70-130	Pass	
Benzo(b&j)fluoranthene	S24-De0004894	NCP	%	85			70-130	Pass	
Benzo(g.h.i)perylene	S24-De0004894	NCP	%	89			70-130	Pass	
Benzo(k)fluoranthene	S24-De0004894	NCP	%	90			70-130	Pass	
Chrysene	S24-De0004894	NCP	%	88			70-130	Pass	
Dibenz(a.h)anthracene	S24-De0004894	NCP	%	91			70-130	Pass	
Fluoranthene	S24-De0004894	NCP	%	79			70-130	Pass	
Fluorene	S24-De0004894	NCP	%	86			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S24-De0004894	NCP	%	84			70-130	Pass	
Naphthalene	S24-De0004894	NCP	%	86			70-130	Pass	
Phenanthrene	S24-De0002752	NCP	%	87			70-130	Pass	
Pyrene	S24-De0004894	NCP	%	77			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S24-De0004894	NCP	%	103			70-130	Pass	
4.4'-DDD	S24-De0004894	NCP	%	80			70-130	Pass	
4.4'-DDE	S24-De0004894	NCP	%	88			70-130	Pass	
4.4'-DDT	S24-De0004894	NCP	%	85			70-130	Pass	
a-HCH	S24-De0002752	NCP	%	115			70-130	Pass	
Aldrin	S24-De0004894	NCP	%	85			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
b-HCH	S24-De0002752	NCP	%	89			70-130	Pass	
d-HCH	S24-De0004894	NCP	%	77			70-130	Pass	
Dieldrin	S24-De0004894	NCP	%	87			70-130	Pass	
Endosulfan I	S24-De0004894	NCP	%	93			70-130	Pass	
Endosulfan II	S24-De0004894	NCP	%	88			70-130	Pass	
Endosulfan sulphate	S24-De0002752	NCP	%	88			70-130	Pass	
Endrin	S24-De0004894	NCP	%	90			70-130	Pass	
Endrin aldehyde	S24-De0002752	NCP	%	77			70-130	Pass	
Endrin ketone	S24-De0004894	NCP	%	73			70-130	Pass	
g-HCH (Lindane)	S24-De0002752	NCP	%	103			70-130	Pass	
Heptachlor	S24-De0004894	NCP	%	103			70-130	Pass	
Heptachlor epoxide	S24-De0004894	NCP	%	101			70-130	Pass	
Hexachlorobenzene	S24-De0004894	NCP	%	93			70-130	Pass	
Methoxychlor	S24-De0004894	NCP	%	93			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S24-No0085446	NCP	%	88			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	R24-De0006962	NCP	%	93			75-125	Pass	
Cadmium	R24-De0006962	NCP	%	95			75-125	Pass	
Chromium	R24-De0006962	NCP	%	101			75-125	Pass	
Copper	R24-De0006962	NCP	%	98			75-125	Pass	
Lead	R24-De0006962	NCP	%	95			75-125	Pass	
Mercury	R24-De0006962	NCP	%	104			75-125	Pass	
Nickel	R24-De0006962	NCP	%	96			75-125	Pass	
Zinc	R24-De0006962	NCP	%	108			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25 °C as rec.)	M24-No0072162	NCP	uS/cm	42	47	13	30%	Pass	
pH (1:5 Aqueous extract at 25 °C as rec.)	M24-No0072162	NCP	pH Units	8.1	8.0	pass	30%	Pass	
Duplicate									
Cation Exchange Capacity				Result 1	Result 2	RPD			
Cation Exchange Capacity	N24-De0004138	CP	meq/100g	33	33	1.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S24-De0004898	NCP	mg/kg	0.5	< 0.5	5.0	30%	Pass	
Fluorene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S24-De0004898	NCP	mg/kg	0.6	0.5	8.0	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S24-De0004898	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	S24-De0002751	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	S24-De0002751	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S24-De0004898	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	S24-De0004898	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	N24-De0003861	NCP	%	5.9	5.9	1.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	N24-De0004142	CP	mg/kg	5.4	6.3	16	30%	Pass	
Cadmium	N24-De0004142	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	N24-De0004142	CP	mg/kg	46	55	17	30%	Pass	
Copper	N24-De0004142	CP	mg/kg	24	30	24	30%	Pass	
Lead	N24-De0004142	CP	mg/kg	75	120	49	30%	Fail	Q02
Mercury	N24-De0004142	CP	mg/kg	0.1	0.2	43	30%	Fail	Q15
Nickel	N24-De0004142	CP	mg/kg	29	36	22	30%	Pass	
Zinc	N24-De0004142	CP	mg/kg	82	130	46	30%	Fail	Q02
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	N24-De0004154	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	N24-De0004154	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	N24-De0004154	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	N24-De0004154	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	N24-De0004154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	N24-De0004154	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	N24-De0004154	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	N24-De0004154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	N24-De0004154	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	N24-De0004161	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	N24-De0004161	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	N24-De0004161	CP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	N24-De0004161	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	N24-De0004161	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	N24-De0004161	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q02	The duplicate %RPD is outside the recommended acceptance criteria. Further analysis indicates sample heterogeneity as the cause
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Andrew Black	Analytical Services Manager
Carroll Lee	Senior Analyst-Organic
Edward Lee	Senior Analyst-Organic
Emily Rosenberg	Senior Analyst-Metal
Joseph Edouard	Senior Analyst-Volatile
Luke Holt	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Sample Properties
Mickael Ros	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Organic
Roopesh Rangarajan	Senior Analyst-Sample Properties
Roopesh Rangarajan	Senior Analyst-Volatile
Sayeed Abu	Senior Analyst-Asbestos

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.