Land & Groundwater Consulting Pty Ltd
ABN 65 162 117 928

Vaughan Constructions

Detailed Environmental Site Investigation Report

22-23 Lambridge Place
Penrith, NSW

27 August 2021

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Version: 1, Version Date: 10/09/2021

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Executive Summary

Background

Land & Groundwater Consulting Pty Ltd (LG) has been engaged by Vaughan Constructions to undertake a Detailed Environmental Site Investigation (DESI) at the site known as 22-23 Lambridge Place, Penrith, NSW.

LG understands that the proposed development comprises the extension of the existing warehouse facility.

Soil samples were collected from 15 borehole locations across the site, including 2 existing stockpiles (Stockpile 1 and 2). Samples collected were analysed for total recoverable hydrocarbons (TRHs); benzene, toluene, ethylbenzene and xylene (BTEX); polycyclic aromatic hydrocarbons (PAHs); organochlorine pesticides (OCPs); organophosphate pesticides (OPPs); polychlorinated biphenyl (PCBs); metals (arsenic, cadmium, copper, chromium, lead, nickel, mercury and zinc) and asbestos.

Conclusions

Based on the findings of this Detailed Environmental Site Investigation the following conclusions are provided:

- The surface fill materials comprised clay, gravel and minor traces of demolition at the locations investigated. This fill was underlain by natural clay.
- The soils at the locations sampled and analysed did not contain concentrations of TRHs, BTEX, PAHs, OCPs, OPPs, PCBs and heavy metals that were greater than the Commercial/Industrial D land use criteria, at the time tested, with the following exception;
  - Benzo(a)pyrene concentrations were detected above the EIL D criteria in sample QC2 (replicate of BH4/0.1-0.3).

  However, benzo(a)pyrene concentrations in soil were all below the HIL D. Therefore, it is considered that further investigation or remediation of EIL D exceedances is not required in order to meet land use suitability for Commercial/Industrial D.
- The assessment results indicate that the site subject to this DESI is suitable for Commercial/Industrial D land use, consistent with a General Industrial (IN1) zoning.

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1. Introduction

1.1 Background

Land & Groundwater Consulting Pty Ltd (LG) has been engaged by Vaughan Constructions to undertake a Detailed Environmental Site Investigation (DESI) at Lot 11 in Deposited Plan (DP) 1087962, known as 22-23 Lambridge Place, Penrith, NSW (hereafter referred as 'the site'). The location of the site is shown in **Figure 1**.

LG understands that the proposed development comprises the extension of the existing warehouse facility currently located at Lot 12 in DP 1087962.

This DESI report should be read in conjunction with the following document:

- Martens and Associates (2017) Preliminary Site Investigation: Lot 11 DP1087962, 22-23 Lambridge Place, Penrith, NSW. Report ref. P1706245JR01V01.

The DESI was undertaken with respect to the staged investigation approach outlined in *State Environmental Planning Policy No. 55 - Remediation of Land* (SEPP 55 - Ref 1) and the National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure 1999* (amended 2013) (NEPC, 2013 - Ref 2).

This report was prepared in general accordance the NSW Environment Protection Authority (EPA) Guidelines for *"Consultants Reporting on Contaminated Sites"* (2020).

1.2 Objectives

The specific objectives of the DESI were to:

- Provide an assessment of potential soil contamination resulting from onsite or offsite sources, during past or present activities;
- Investigate the potential extent previously identified contamination by means of targeted sampling and laboratory analysis of relevant contaminants;
- Assess the site suitability for commercial land use; and
- Assess the need for further investigations and/or remedial action, if any.

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1.3 Scope of Works

The following works were undertaken to meet the objective described above:

- Reviewed findings from the preliminary investigation undertaken by Martens and Associates (2017), so that the preliminary findings could be relied upon, to assess potential soil contamination at the site;
- Prepared a sampling and analytical quality plan (SAQP) outlining the sampling and assessment strategy for the DESI;
- Prepared a health, environment and safety plan (HESP) for all site related activities, to identify the potential risk associated with the works and to document and implement control measures to manage and mitigate the risks;
- Conducted dial before you dig search to assess for the presence of underground services and pipework;
- Undertook soil field investigations which included the following works:
  - Given that the site (Lot 11) covers an area of approximately 6,301 m^2 (0.6 ha), a total of 15 soil sampling locations were investigated in accordance with the Minimum Sampling Points Required for Site Characterisation, published under the NSW EPA (1995) "*Sampling Design Guidelines"* located in a systematic grid pattern across the site with allowance for structural obstacles (e.g. existing ponds and stockpiles);
  - Drilling of fifteen (15) boreholes using a machine drilling rig to a minimum depth of approximately 1.0 metres below ground surface (m BGS);
  - Collection of representative samples of fill materials (i.e. 0.1 to 0.3 m BGS) and natural soils (i.e. 0.5 to 1.0 m BGS) at each of the borehole location and/or at changes in lithology or where visual and/or olfactory indicators of contamination were observed;
  - Completion of detailed environmental logging of each borehole for evidence of contamination (e.g. by reference to staining, odour, presence of materials of anthropogenic materials), fill materials and soil properties;
  - Sampling of 2 existing stockpiles (Stockpile 1 and 2) using a machine drilling rig at discrete locations within each stockpile, to collect samples at 0.1 to 0.3 m and 0.5 to 1.0 m BGS.

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- Submission of fifteen (15) primary samples of fill materials and two (2) field quality control samples to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analytes:
  - Total Recoverable Hydrocarbons (TRHs);
  - Benzene, Toluene, Ethylbenzene and Xylene (BTEX);
  - Polycyclic Aromatic Hydrocarbons (PAHs); and
  - Heavy metals (arsenic, cadmium, copper, chromium, lead, nickel, mercury and zinc).
- Submission of eight (8) primary samples of fill materials to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analytes:
  - Organochlorine Pesticides (OCPs);
  - Organophosphate Pesticides (OPPs); and
  - Polychlorinated Biphenyls (PCBs).
- Submission of fourteen (14) primary samples of fill materials to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analyte:
  - Asbestos identification.
- Submission of fifteen (15) primary samples of natural soils to a NATA accredited laboratory for variable analysis for the following suite of analytes:
  - TRHs;
  - BTEX; and
  - Heavy metals (arsenic, cadmium, copper, chromium, lead, nickel, mercury and zinc).
- Submission of eight (8) primary samples of natural soils to a NATA accredited laboratory for variable analysis for the following suite of analyte:
  - PAHs.

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- Submission of one (1) primary sample of natural soils to a NATA accredited laboratory for variable analysis for the following suite of analytes:
    - Organochlorine Pesticides (OCPs);
    - Organophosphate Pesticides (OPPs); and
    - Polychlorinated Biphenyls (PCBs).
- Submission of one (1) primary sample of natural soils to a NATA accredited laboratory for variable analysis for the following analyte:
    - Asbestos identification.
- Submission of four (4) stockpile material samples to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analytes:
    - TRHs;
    - BTEX;
    - PAHs;
    - Heavy metals (arsenic, cadmium, copper, chromium, lead, nickel, mercury and zinc); and
- Submission of two (2) stockpile material samples to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analytes:
    - OCPs;
    - OPPs;
    - PCBs;
- Submission of one (1) stockpile material sample to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following analyte:
    - Asbestos identification.

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- Assessed the reliability of the field and laboratory procedures according to the requirements of NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd edition)*; and
- Prepared and submitted this DESI report including the following:
  - Desk study findings and findings of the subsurface investigation including, an outline of fieldwork undertaken, site conditions encountered, field observations, boreholes and bore logs.
  - A conceptual site model, data quality objectives, investigation methodologies and analytical laboratory results.
  - A general evaluation of the feasibility of the proposed development based on the potential environmental constraints identified.
  - Recommendations of the management options and/or remediation actions required to address the contamination impacts identified (if any).

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2. Site Description

2.1 Site Identification

The site is located in Penrith, NSW, approximately 50 km west of the Sydney central business district (CBD). The site layout is presented in **Figure 2**. Details relating to the site are presented in **Table 1**.

Table 1 – Site Identification Details

Site Details	Description
Address	22-23 Lambridge Place, Penrith, NSW
Lot/DP	Lot 11 in DP 1087962
Local Government Area	Penrith City Council
Parish and County	Parish of Castlereagh, County of Cumberland
Site Area	Approximately 6,301 m^2
Registered Owner	FoodBoss
Zoning	IN1 General Industrial
Current Land Use	Site currently vacant land used for parking/storing vehicles.

2.2 Site Setting

The setting of the site including surrounding land use, topographical, geological and hydrogeological information for the locality is summarised in **Table 2**.

Table 2 – Site Setting Information

Category	Observation
Surrounding Land Use	The site is located in an industrial zone and is classified General Industrial (IN1). Adjacent land use is primarily industrial.
Topography	Predominantly flat with slight slope (<13) towards the west.
Geology and Hydrogeology	The Penrith 1:100,000 Geological Sheet 9030 (NSW Dept. of Mineral Resources, 1991) identifies the site as being underlain by Quaternary Cranebrook Formation with expected gravel, sand, silt and clay. The NSW Environment and Heritage eSPADE website identifies the site as having soils of the Luddenham variety consisting of shallow (<100 cm) dark podzolic soils or massive earthy clays on crests; moderately deep (70-150 cm) red podzolic soils on upper slopes; moderately deep (<150 cm) yellow podzolic soils and prairie soils on lower slopes and drainage lines.

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Fill Materials	The surface of the majority area was predominantly covered with a gravel roadbase. During this DESI fill materials encountered comprised clay and gravel (roadbase) to depths ranging from 0.0 to 0.2 m.
Natural Soils	Clays were encountered during this DESI underlying fill materials. The clays are described as orange-yellow-brown, non-plastic to low plasticity, firm to stiff, hard, moist. The clays were encountered below the fill materials at depths ranging from 0.3 m to 1.0 m. Within the clay, ferruginous nodules were noted in some areas.
Registered Groundwater Bores	A review of groundwater bore records available on the NSW Office of Water (NOW) online database was undertaken by LG on 18 August 2021. The search was limited to registered bores located within a radius of approximately 500 m of the site. The search identified the presence of twenty-six (26) registered bores (GW004788, GW107897, GW040456, GW040452, GW107565, GW107898, GW107899, GW102208, GW102206, GW102209, GW102183, GW102213, GW102182, GW102181, GW102180, GW102239, GW102202, GW102207, GW102211, GW102210, GW102212, GW114760, GW107900, GW107564, GW040455, GW108072) within a radius of approximately 500 m of the site. Copies of the licensed bore map showing the search area and drilling logs are included in Appendix C.
Nearest Surface Water Feature	The nearest surface water bodies are the Penrith Lakes located approximately 650 m northwest of the site and the Nepean River located approximately 1.3 km southwest of the site.
Surface Covering	▪ Approx. 90% of the site was covered with roadbase gravel and pavement ▪ Approx. 10% was covered with grass, weed and shrub vegetation

2.3 Site Condition

LG made the following observations during fieldworks conducted between 11 August 2021 (refer site photographs in **Appendix B**):

- The surface topography is generally flat and mildly sloped down from east to west;
- The site comprised of a vacant and un-occupied block of land. No building structures of note were present on the site;
- The eastern boundary of the site is grassed with weeds, while the central area was covered with unsealed pavement and gravel materials;
- There were 2 stockpiles of approximately 150 m^3 containing clay fill material located within the eastern portion of the site;
- No significant signs of oil spill or stains were noted on the floor surfaces across the site;

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- No significant rubbish or domestic waste was observed across the site;
- There were no active pipelines; and
- There were no above ground tanks (ASTs) or visible evidence of underground storage tanks (USTs) or systems which should cause air emissions such as laboratories, incinerators, surface impoundment and land treatment areas.

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3. Previous Investigations

3.1 Summary of Previous Investigations

A summary of relevant previous investigation works that have been undertaken across the site is provided in **Table 3**.

Table 3 – Summary of Works Completed

Date	Report Objectives, Scope and Outcomes
Martens and Associates (2017) Preliminary Site Investigation: Lot 11 DP1087962, 22-23 Lambridge Place, Penrith, NSW. Report ref. P1706245JR01V01.	The objectives of the report were to: ▪ Provide indicative information as to the risk and nature of contamination at the site based on past and current land uses. ▪ Provide comments on the potential contamination risks at the site and the need for further investigation (if required). The scope of the report included: ▪ A review of published geological, soil landscape and acid sulphate soils; ▪ A review of site operational history including the following database searches; – Review of the NSW Department of Primary Industries Water groundwater database for registered groundwater bores in the vicinity of the site; – Review of readily available historical aerial photographs to identify previous land uses that may indicate potential contamination; – Review of current and historical title deeds to identify previous owners that may indicate potentially contaminating activities; – Review of Section 149 Planning Certificates available for the site; and – Review of the NSW EPA Register for notices issued under the Contaminated Land Management Act 1997 and the Protection of the Environment Operations Act 1997. ▪ A site walkover by an experienced environmental scientist to identify site features and activities that may indicate the potential for contamination of the site from present or past land uses; and ▪ Provision of a PESI report detailing the findings of the assessment. The outcomes of the report were: ▪ The land was formerly undeveloped agricultural land from the 1970's until the 2000's when earthworks likely took place and became used for the storage of containers, trailers, stockpiles and pallets. Gravel roadbase covered the majority of site and was used to park/store vehicles and truck trailers during the 2010's; ▪ Given that no evident sources of mobile contamination could be visually identified on site, it was considered that potential contaminants associated with past and present land uses were minimal; and

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Date	Report Objectives, Scope and Outcomes
	▪ Based on the findings of the PESI, there was a risk that contaminants could potentially have been introduced to the site through the importation of fill materials, stockpiling of various materials and through the storage of vehicles. Therefore, the site was unlikely to be suitable for the proposed expansion of the existing industrial facility, consistent with a General Industrial (IN1) zoning.

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4. Conceptual Site Model

A Conceptual Site Model (CSM) was developed in consideration of the background information, current site conditions and historical activities at the site. The CSM took into account the land use of a multi-storey commercial building with 1 basement level.

4.1 Potential Chemical Hazards and Contamination Sources

Based on the review of available documents for previous investigations, LG considered potential chemical hazards and onsite contamination sources to be as follows:

- Impacts from importation of fill materials to the site from of unknown sources and origins;
- Impacts including spills and leaks from vehicular parking areas;
- Buried hazardous materials including the following:
  - Potential asbestos-containing materials (PACMs) such as pipe outlet (~500 mm diameter) observed within the north-western portion of the site; and
  - Potential underground storage tanks (USTs) anecdotally known to have existed within the north-eastern portion of the site;
- Potential residues from the potential use of organochlorine pesticides for termite and pest control and USTs; and

4.2 Contaminants of Potential Concern

Based on the findings of available documents for previous investigations, the chemicals of potential concern (COPC) at the site are considered to be as follows:

- Soil - heavy metals (HMs), total recoverable hydrocarbons (TRHs), monocyclic aromatic hydrocarbon compounds benzene, toluene, ethyl-benzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine and organophosphorous pesticides (OCPs/OPPs), polychlorinated biphenyls (PCBs) and asbestos.

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4.3 Exposure Pathway Evaluation

Exposure pathways that were considered relevant for this assessment are listed in **Table 4**.

Table 4 – Exposure Pathways

Contamination Source	Transport Mechanism	Exposure Media	Potential Receptors	Likelihood of Exposure
Impacted soils	Dermal contact during and post construction in accessible soil areas.	Ingestion and dermal contact, inhalation of asbestos fibres and volatile hydrocarbons (if present) during site redevelopment and/or future site use by occupants	Outdoor workers/ maintenance workers and future site occupants.	Unlikely if remedial action or onsite management to prevent exposure is undertaken.

4.4 Data Gaps

On the basis of the qualitative data available for the site, including site history review and preliminary site investigations (Martens and Associates, 2017), it was considered necessary to satisfactorily characterise potential contamination resulting from:

- Importation of fill materials to the site from of unknown source and origin;
- Potential spills and leaks from vehicular parking areas;
- Weathering of building surfaces (i.e. painted surfaces, metallic structures, cement-fibre building materials) on the site;
- Buried hazardous materials, including potential asbestos containing materials (ACMs) encasing utilities;
- Possible use of organochlorine pesticides for termite and pest control; and
- Possible site impacts from unknown soil contamination from offsite sources.

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5. Data Quality Objectives

In accordance with Appendix IV of the *NSW DEC Guidelines for the NSW Site Auditor Scheme (2nd Edition, 2006)* the process of developing Data Quality Objectives (DQO) was used by LG to determine the appropriate level of data quality needed for the specific data requirements of the project. The DQO process was applied to define the type, quantity and quality of data needed to support decisions for the assessment of the site, as outlined in **Table 5**.

Table 5 – Data Quality Objectives

Step	Objectives
State the Problem (Step 1)	For redevelopment purposes the site needs to be made suitable for ongoing commercial land uses. The detailed investigations were therefore required to assess risks posed by contaminated soils to potential onsite and offsite receptors, in accordance with NSW EPA guidelines.
Identify the Decisions (Step 2)	To assess the environmental condition of the site for the proposed ongoing commercial land use, LG would make the required decisions based on the following questions: ▪ Is site soil quality suitable for the intended land use? ▪ Are there any buried contaminant sources (or building materials) still present on the site? ▪ Do site soils require further remediation or treatment and special management before the site can be used for the intended purposes, or to prevent offsite migration of contaminants?
Identify Inputs to the Decision (Step 3)	The primary inputs to the assessment of soil were as follows: ▪ Results from previous investigations (Martens and Associates (2017); ▪ Implementation of a sampling, analytical and quality plan; ▪ Observations made during the sampling program, which may in fluence the need for further assessment; ▪ Assessment of the suitability of the data obtained from sampling and analysis against data quality indicators (DQIs); ▪ Assessment of analytical results against relevant criteria. These would comprise: – Relevant soil investigation levels (SILs), to determine the requirement for site remediation and validation.
Define the Study Boundaries (Step 4)	The spatial boundaries of the assessment were limited as follows: ▪ Lateral - the geographical boundary of the assessment was defined by the site boundary, as illustrated in **Figure 1**; ▪ Vertical - from the existing ground level to the proposed depth of the investigation (approximately 1.0 m for boreholes); and ▪ Temporal - the findings of this assessment would provide and additional snapshots of the site contamination status and can

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Step	Objectives
	be compared to the previous investigations to provide further evidence that the site can be made suitable for ongoing commercial land use. The results of the investigation would apply to the site on the days of sampling, site activities postdating the investigation may invalidate the investigation results (or words to this effect).
Develop a Decision Rule (Step 5)	Laboratory test results would be accepted if: ▪ All contracted laboratories are accredited by NATA for the analyses undertaken; ▪ All laboratory analytical data is generally within pre-determined data acceptance criteria, in accordance with laboratory quality assurance and quality control (QA/QC) policies and DQOs; ▪ QA/QC results demonstrate acceptable reliability and representativeness of the data set; and ▪ Laboratory practical quantitation limits (PQL) are below the adopted acceptance/assessment criteria for the tested contaminants, wherever possible. If soil contamination was identified, further assessment may be required. Depending on the results of the assessment, a remediation action plan may be required to render the site suitable for the proposed ongoing commercial land use.
Specify Limits of Decision Errors (Step 6)	Specific limits for this project are in accordance with the appropriate guidance made or endorsed by the NSW EPA, appropriate indicators of data quality and standard procedures for field sampling and handling. This step also examines the certainty of conclusive statements based on the available site data collected. This should include the following points to quantify tolerable limits: ▪ A decision can be made based on a probability that 95% of the data, which is collected using a systematic sampling pattern, will satisfy the given site criteria. This follows the guidance given in NSW EPA (1995) for site validation contingent upon the upper 95% confidence limit (95% UCL) on the average site concentrations for each respective contaminant being below the relevant criteria. Therefore, a limit on the decision error would be 5% that a conclusive statement may be incorrect. ▪ A decision can be made based on the probability that a contami nation hotspot of a certain circular diameter would be detected with 95% confidence using a selected density of systematic data points. The decision error would be limited to a probability of 5% that a contamination hotspot may not be detected.
Optimise the Design for Obtaining Data (Step 7)	This step was intended to define the data collection design, which would generate data to efficiently and effectively satisfy the DQOs. Sampling procedures to be implemented to optimise data collection for achieving the DQOs included the following: ▪ Soil sampling from a systematic, triangular sampling grid; ▪ Stratified sampling from selected depth intervals to characterise fill soils, separately to natural soils.

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To ensure that the investigation data collected is of an acceptable quality the investigation data set was to be assessed against data quality indicators (DQI), which related to both field and laboratory-based procedures.

The pre-determined DQIs established for the project are discussed below in relation to the following PARCC parameters, and are shown in **Table 6**.

- Precision - measured the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques was assessed by calculating the Relative Percent Difference (RPD) of duplicate samples.
- Accuracy - measured the bias in a measurement system. The accuracy of the laboratory data that was generated during this study was a measure of the closeness of the analytical results obtained by a method to the 'true' value. Accuracy was assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards.
- Representativeness - expressed the degree which sample data accurately and precisely represented a characteristic of a population or an environmental condition. Representativeness was achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- Comparability - expressed the confidence with which one data set can be compared with another. This was achieved through maintaining a level of consistency in techniques used to collect samples; and ensuring analysing laboratories used consistent analysis techniques; and reporting methods.
- Completeness – was defined as the percentage of measurements made which were judged to be valid measurements. The completeness goal was set at there being sufficient valid data generated during the study.
- Sensitivity – expressed the appropriateness of the chosen laboratory methods, including the limits of reporting, in producing reliable data in relation to the adopted site assessment criteria.

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Table 6 – Summary of Data Quality Indicators

Data Quality Indicator	Frequency	Data Quality Criteria
Precision		
Split duplicates (intra laboratory)	1 / 20 samples	<50% RPD or agreement between asbestos presence/absence above the detection limit[1]
Blind duplicates (inter laboratory)	1 / 20 samples	
Laboratory Duplicates	1 / 20 samples	
Accuracy		
Surrogate Spikes	All organic analysis samples	70-130 % chemical analysis only
Laboratory Control Samples	1 per lab batch	70-130 % chemical analysis only
Matrix Spikes	1 per lab batch	70-130 % chemical analysis only
Representativeness		
Sampling appropriate for media and analytes	All samples	-
Samples extracted and analysed within holding times	All samples	Soil: organics - 14 days, Inorganics -6 months, asbestos N/A
Laboratory blanks	1 per laboratory batch	<LOR chemical analysis only
Trip Spikes	1 per sampling event with volatile analytes	70-130 % recovery for BTEX compounds
Storage blanks	1 per sampling event with volatile analytes	< LOR BTEX
Rinsate	1 per sampling event with chemical COPCs	< LOR chemical analysis only
Comparability		
Standard operating procedures for sample collection and handling	All samples	All samples[2]
Standard analytical methods used for all analytes	All samples	All samples[2]
Consistent field condition, sampling staff and laboratory analysis	All samples	All samples[2]
Limits of reporting appropriate and consistent	All samples	All samples[2]
Completeness		
Sample description, field quantification and COCs completed and appropriate	All samples	All samples[2]

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Data Quality Indicator	Frequency	Data Quality Criteria
Satisfactory frequency and results for all QC samples	All QC samples	95 %
Data from critical samples considered valid	All samples	Critical samples valid[2]
Clear indication of how well the sampling programme complied with the SAQP	All samples	Critical samples valid[2]
Sensitivity		
Analytical methods and limits of recovery appropriate for media and adopted site assessment criteria	All samples	LOR <= site assessment criteria

Notes:

1. If the RPD between duplicates was greater than the pre-determined data quality indicator, a judgment was made as to whether the excess was critical in relation to the validation of the data set or unacceptable sampling error was occurring in the field.

2. Qualitative assessment of compliance with standard procedures and appropriate sample collection methods was completed during the DQI compliance assessment.

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6. Sampling and Analysis Methodology

6.1 Scope of Works

The overall scope of works for the contamination investigation was as follows:

- Preparation of a health safety and environment plan;
- Review of previous data and reports described in **Section 3.1**;
- Field investigations, involving:
  - Soil sampling from 15 borehole locations across the site to a depth of at least 1 m below ground level (BGL), as shown in **Figure 2**. Borelogs are presented in **Appendix D**;
  - Soil sampling from 2 existing stockpiles (Stockpile 1 and 2), as shown in **Figure 3,** at 0.1 to 0.3 m and 0.5 to 1.0 m BGS;
  - Laboratory analysis of soil for the identified chemicals of concern including asbestos; and
  - Preparation of a site contamination report, with recommendations for remedial action, if warranted.

6.1.1 Sampling Rationale

The additional soil investigations were conducted by drilling of boreholes using a combination of targeted and systematic sampling patterns to address the identified data gaps, as follows:

- Given that the site (Lot 11) covers an area of approximately 6,301 m^2 (0.6 ha), a total of 15 soil sampling locations were proposed in accordance with the Minimum Sampling Points Required for Site Characterisation, published under the NSW EPA (1995) *Sampling Design Guidelines* located in a systematic grid pattern across the site;
- Boreholes were systematically located at 15 locations across the site and drilled to a minimum of 1.0 m into natural soils or refusal into bedrock;
- Sampling from 2 existing stockpiles of excavated material was conducted by adopting one the options summarised in **Section 5.1.2**:

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- The systematic (grid-based) sampling locations have been selected to supplement the existing sampling and analysis information, with laboratory analyses on representative soil samples for potential contaminants including:
  - Broad coverage for heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); total recoverable hydrocarbons (TRHs); monocyclic aromatic hydrocarbons - benzene, toluene, ethyl-benzene and xylenes (BTEX); polycyclic aromatic hydrocarbons (PAHs); organochlorine pesticides (OCPs); organophosphate pesticides (OPPs); polychlorinated biphenyls (PCBs); and
  - Potential asbestos-containing materials (ACM) in impacted fill soils across the site.

6.1.2 Soil Investigation Methodology

LG performed subsurface investigation and soil sampling via use of a machine drilling rig. It was anticipated that this equipment would be the preferred method to assess soil contamination, allowing collection of representative soil samples from the filling layer, the fill/clay interface and the natural (residual) clay, which underlies the fill layer. LG's investigation team had access to all areas during the investigation, as follows:

- Subsurface conditions were logged by personnel qualified and experienced in dealing with contaminated sites.
- Soil samples across the site were generally collected at the following depths:
  - One soil sample within the fill layer at 0.1-0.3 m bgl (subject to the thickness of the fill layer at each sampling location);
  - One soil sample at, or close to the residual clay layer (estimated depth 0.5 – 1.0 m bgl); and
  - Additional soil samples to be collected where changes in lithology or evidence of contamination.
- Sampling from 2 existing stockpiles (Stockpile 1 and 2) of clay fill material was conducted using a machine drilling rig at discrete locations within each existing stockpile to collect samples at 0.1 to 0.3 m and 0.5 to 1.0 m BGS.
- A summary of the laboratory analytical plan for soils is provided in **Tables 7** and **8**. Sampling locations were measured with reference to existing site features and located with a hand-held GPS.

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6.2 Laboratory Analysis

6.2.1 Soil Analyses

Based on field observations, selected soil samples were analysed in the laboratory for environmental purposes. Laboratory testing comprised analysis of 32 soil samples (assuming 1 sample per location where fill/suspected contamination identified and 1 samples per location where natural material is identified, overall 2 samples per location).

Submission of seventeen (17) fill material samples to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analytes:

- Total Recoverable Hydrocarbons (TRHs);
- Benzene, Toluene, Ethylbenzene and Xylene (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAHs); and
- Heavy metals (arsenic, cadmium, copper, chromium, lead, nickel, mercury and zinc).

Submission of eight (8) fill materials samples to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analytes:

- Organochlorine Pesticides (OCPs);
- Organophosphate Pesticides (OPPs); and
- Polychlorinated Biphenyls (PCBs).

Submission of fourteen (14) fill material samples to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analyte:

- Asbestos identification.

Submission of fifteen (15) natural material samples to a NATA accredited laboratory for variable analysis for the following suite of analytes:

- TRHs;

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- BTEX; and
- Heavy metals (arsenic, cadmium, copper, chromium, lead, nickel, mercury and zinc).

Submission of eight (8) natural material samples to a NATA accredited laboratory for variable analysis for the following suite of analyte:

- PAHs.

Submission of one (1) natural material sample to a NATA accredited laboratory for variable analysis for the following suite of analytes:

- Organochlorine Pesticides (OCPs);
- Organophosphate Pesticides (OPPs); and
- Polychlorinated Biphenyls (PCBs).

Submission of one (1) natural material sample to a NATA accredited laboratory for variable analysis for the following analyte:

- Asbestos identification.

Submission of four (4) stockpile material samples to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analytes:

- TRHs;
- BTEX;
- PAHs;
- Heavy metals (arsenic, cadmium, copper, chromium, lead, nickel, mercury and zinc); and

Submission of two (2) stockpile material samples to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following suite of analytes:

- OCPs;
- OPPs;

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- PCBs;

Submission of one (1) stockpile material sample to a National Association of Testing Authorities (NATA) accredited laboratory for variable analysis for the following analyte:

- Asbestos identification.

Field sampling for asbestos identification were conducted in general accordance with the guidance provided in NEPM (2013), which:

- Defines ACM vs FA and AF;
- Provides approach for sampling density;
- Provides sampling methodology; and
- Defines risk in guidelines as %Wt/Wt.

Therefore, NATA analytical methods were adopted for reliable asbestos identification analysis of soil samples.

The primary and quality control samples for the range of potential contaminants are summarised in **Tables 7** and **8**.

Table 7 – Laboratory Analyses for Soil Samples

Analyte	Total Soil Samples	Intra-Lab Duplicates	Inter-Lab Triplicates	Equipment Rinsate	QA Trip Blank
Asbestos Quantification	-	-	-	-	-
Asbestos Identification	15	-	-	-	-
8 Heavy Metals	32	2	-	-	-
vTRH(C6-C10), sTRH(C11-C40) & BTEX	32	2	-	-	-
PAHs	32	2	-	-	-
OCPs, OPPs, PCBs	9	0	-	-	-
Trip Spike (BTEX)	-	-	-	-	-

Notes:

- Asbestos Quantification - of all forms of asbestos including bonded ACM and AF/FA.
- Asbestos Identification - of any ACM and statement of presence or absence of asbestos fibres.

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- Heavy Metals – arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc.
- TRHs – total recoverable hydrocarbons (including TPH fractions, F1, F2, F3 and F4).
- PAHs – polycyclic aromatic hydrocarbons (including Carcinogenic PAHs as BaP TEQ).
- BTEX – benzene, toluene, ethyl-benzene, total xylenes.
- OCPs/OPPs – Organochlorine and organophosphate pesticides.
- PCBs – polychlorinated biphenyls.

It should be noted that multiple samples were collected from each sampling location. However, representative residual samples were only tested in selected locations to provide an indication of natural soil conditions.

Untested residual samples were held by the laboratory, and tested at a later stage if warranted (i.e. for vertical delineation purposes in the case that shallow fill is found to be contaminated).

Table 8 – Laboratory Analyses for Stockpiles

Analyte	Total Soil Samples	Intra-Lab Duplicates	Inter-Lab Triplicates	Equipment Rinsate	QA Trip Blank
Asbestos Identification	1 per 25 m^3	5% primary	-	-	-
8 Heavy Metals	1 per 25 m^3	5% primary	-	-	-
vTRH(C6-C10), sTRH(C11-C40) & BTEX	1 per 25 m^3	5% primary	-	-	-
PAHs	1 per 25 m^3	5% primary	-	-	-
OCPs, OPPs, PCBs	1 per 25 m^3	5% primary	-	-	-
Trip Spike (BTEX)	-	-	-	-	-

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7. Assessment Criteria

7.1 Soil Assessment Guidelines

The soil investigations works were undertaken with consideration to aspects of the following guidelines, as relevant:

- Australian Standard AS4482.1 (2005) Guide to the investigation and sampling of sites with potentially contaminated soil - Part 1: Non-volatile and semi-volatile compounds;
- NEPM (2013) Schedule B(1) *Guideline on Investigation Levels for Soil and Groundwater, National Environment Protection (Assessment of Site Contamination) Measure 1999 – Amendment 2013*, National Environment Protection Council (NEPC), May 2013;
- NSW DECC (2009) *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*;
- NSW EPA (1995) *Sampling Design Guidelines*;
- NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*; and
- NSW EPA (2020) *Consultants Reporting on Contaminated Sites*.

Application of these guidelines to this DESI is briefly described below.

7.2 Soil Assessment Criteria

The guidelines to evaluate soil analytical results currently applied in NSW, as listed above, presents a range of Health-Based Soil Investigation Levels (HILs), Provisional Phytotoxicity-Based Investigation Levels (PILs), Ecological Investigation Levels (EILs), sensitive land use thresholds and expected background concentration ranges for urban redevelopment sites in NSW. Application of these guidelines are briefly described below.

HILs

The HILs described by NEPC (2013) guidelines are based on the *Australian exposure factor guidance* (enHealth 2012). HILs are scientifically based, generic assessment criteria designed to be used in the first stage (Tier 1 or 'screening') of an assessment of potential risks to human health from chronic exposure to contaminants. They are

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intentionally conservative and are based on a reasonable worst-case scenario for four generic land use settings:

- HIL A - residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools and primary schools;
- HIL B - residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats;
- HIL C - public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate; and
- HIL D - commercial/industrial such as shops, offices, factories and industrial sites.

SILs specifically for the lower volatility aliphatic and aromatic petroleum hydrocarbon components are also provided in NEPC (2013) for the various land use scenarios described above.

The NSW EPA endorsed contaminated site assessment process also stipulates that the impact of contaminants on ground and surface water, potential degradation of building structures and affects of chemical mixtures need to be considered.

PILs & EILs

The PILs (NSW DEC, 2006) and EILs (NEPC, 2013) have been devised for the protection of plant health, and are designed to be applied as single number criteria indicative of environmental effect. The PILs have been developed for application to sandy loam soils with a pH of 6 to 8. As such, their use has significant limitations since phytotoxicity depends on soil and species parameters in ways that are not fully understood and they are intended for use as a screening guide only. The NSW EPA decision process for assessing urban redevelopment sites stipulates that the PILs need to be considered on sites used for either residential purposes, or land uses including parks, recreational open space and secondary schools. PILs are not required to be adopted on land used for commercial/industrial purposes.

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7.2.1 Adopted Soil Assessment Criteria

Given that the site will continue to be used for commercial purposes, and in accordance with the decision process for assessment of urban redevelopment sites (EPA 2017), concentrations of contaminants in soils across the site were compared against the published investigation levels sourced from the following:

- NEPM (2013) Health-based Investigation Levels for Commercial/Industrial (HIL-D);
- NEPM (2013) Health-based Screening Levels (HSLs) for soil vapour intrusion in sandy soils for Commercial/Industrial (HSL-D); and
- NEPM (2013) Ecological Screening/Investigation Levels for Commercial/Industrial (ESL/EIL).

Based on the above, the assessment criteria for asbestos in soil adopted for the assessment of material to remain onsite is summarised in **Table 10**.

Table 9 – Assessment Criteria for Asbestos in Soil

Form of Asbestos	Adopted Validation Criterion[1]
Bonded ACM	0.05 %
Fibrous asbestos or asbestos fines[2]	0.001 %
All forms of asbestos	No visible ACM for surface soil (0-0.1 m gs) and no asbestos fibres in soil[3]

Notes:

1. NEPC 2013 Commercial/Industrial (HSL D).
2. The screening level of 0.001 % w/w asbestos in soil for fibrous asbestos and asbestos fines (i.e. non-bonded/friable asbestos) only applies where the fibrous asbestos and asbestos fines are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres.
3. As demonstrated by laboratory analysis in accordance with NATA analysis method consistent with AS4964 (2004) with a detection limit of 0.01 % w/w obtained from a 500 mL sample.

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7.2.2 Application of Soil Assessment Criteria

Since the existing stockpile and hardstand materials are not intended to be retained onsite, these materials were classified only in general accordance with the waste disposal criteria. However, it is noted deviations to this occurred when assessing the presence of all forms of asbestos including bonded ACM and AF/FA.

For soils to be retained and considered as validated (i.e. not posing an unacceptable risk), all individual soil samples were required to meet the above nominated soil assessment criteria. In addition, consideration was required to be given to the potential presence of odorous or discoloured soils (caused by contamination), with higher acceptance thresholds for soils to be retained beneath buildings and slabs, given the relative lack of potential exposure of future site occupants to soils beneath buildings.

7.3 Aesthetic Criteria

Consistent with NSW EPA (2017), aesthetic issues were required to be considered for commercial land use scenarios. Also, the 2013 NEPM 'Schedule B(1) Guideline on the Investigation Levels for Soil and Groundwater' advises that:

'There are no numeric Aesthetic Guidelines but the fundamental principle is that the soils should not be discoloured, malodorous (including when dug over or wet) nor of abnormal consistency. The natural state of the soil should be considered.'

Discoloured soils are not considered by the NSW EPA as a quality of the environment that needs to be protected on a residential site. Given these NEPM and NSW EPA requirements, the aesthetic criteria of relevance to the site in its present condition are considered to be:

- No malodorous materials exposed at ground surface;
- No malodorous gases emanating from the ground; and

The main aesthetic issues at the site are the generation of potential objectionable odours and the surface staining of soils and concrete.

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7.4 Structural Guidelines

The 2013 NEPM *'Schedule B(1) Guideline on the Investigation Levels for Soil and Groundwater'* advises that:

'For some substances such as phenol and sulphates, their impact on structures (effect on PVC piping and cement, respectively) may override the health and environmental considerations. Guidelines for protection of structures in the built environment should be set for a small number of contaminants where there is a concern. A structural guideline of 2000 mg/kg is set for sulphate in soil'

The available information indicates there should be a low risk of significant structural issues for the site as a result of possible contaminants in the ground which could cause corrosion, erosion or destruction of structures.

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8. Quality Assurance and Quality Control (QA/QC)

8.1 Data Validation

The QA/QC program implemented for this DESI was generated as the outcome of the seven-step DQO process, as described in **Section 5**.

The achievement of the project DQOs was demonstrated by reference to the Data Quality Indicators (DQIs), precision, accuracy, representativeness, completeness and comparability. Details of the QA/QC data validation are presented in **Appendix E**.

8.2 Data Useability

The data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported field and analytical results are representative of the conditions at the sample locations and that the analytical data can be relied upon for the purpose of this assessment. It is concluded that overall the quality of the field and analytical data produced is reliable for the purpose of this soil validation report.

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9. Results

The results of the fieldworks and laboratory analysis undertaken for this DESI are detailed in **Sections 9.1** to **9.3** below.

9.1 Field Results

9.1.1 Sub-Surface Observation and Condition

The sub-surface conditions encountered at the targeted areas investigated generally comprised of fill materials with clay and gravel (roadbase) underlain by natural clay. Detailed descriptions of the sub-surface materials and conditions encountered are described on the borelogs presented in **Appendix D**. A summary of the sub-surface conditions encountered at the site is provided in **Table 11**.

Table 10 – Generalised Stratigraphy

Sub-surface Conditions		Depth (Top of Unit m bgs)
Geological Unit	**Description**	
Fill	**Fill**; Clay with some traces of demolition fragments and gravel (roadbase), light grey, poorly graded, loose, dry.	0.0 – 0.3 m
Clay	**Clay**; orange-yellow-brown, non-plastic to low plasticity, firm to stiff, hard, moist.	0.2 – 1.0 m

9.2 Analytical Results

9.2.1 Soil Analytical Results

A total of thirty-two (32) soil samples (BH1/0.1-0.3, BH1/0.5-1.0, BH2/0.1-0.3, BH2/0.5-1.0, BH3/0.1-0.3, BH3/0.5-1.0, BH4/0.1-0.3, BH4/0.5-1.0, BH5/0.1-0.3, BH5/0.5-1.0, BH6/0.1-0.3, BH6/0.5-1.0, BH7/0.1-0.3, BH7/0.5-1.0, BH8/0.1-0.3, BH8/0.5-1.0, BH9/0.1-0.3, BH9/0.5-1.0, BH10/0.1-0.3, BH10/0.5-1.0, BH11/0.1-0.3, BH11/0.5-1.0, BH12/0.1-0.3, BH12/0.5-1.0, BH13/0.1-0.3, BH13/0.5-1.0, BH14/0.1-0.3, BH14/0.5-1.0, BH15/0.1-0.3, BH15/0.5-1.0, QC1 and QC2) were collected on 11 August 2021 from across the site were submitted for laboratory analysis. Soil sample locations are shown in **Figures 2**, and analytical results are summarised in **Table A** attached.

Chain of Custody (COC) documentation and certified laboratory reports are included in **Appendix F**.

Laboratory results indicated that:

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- Concentrations of petroleum hydrocarbons (as TRH and BTEX compounds) were either below the laboratory Estimated Quantitation Limit (EQL), EILs or HILs criteria in all samples collected, with the exception of the following:
  - Concentrations of TRH C6-C10 less BTEX (F1) were above the HIL D in sample TP16/0.0-0.1.

- Concentrations of total PAHs, benzo(a)pyrene, OCPs, OPPs, PCBs and metals (arsenic, cadmium, copper, chromium, lead, nickel, mercury and zinc) were either below the laboratory EQL, EILs or HILs criteria in all samples collected, with the exception of the following:
  - Concentrations of benzo(a)pyrene were above the EIL in sample QC2 (duplicate of BH4/0.1-0.3).

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10. Conclusions

Based on the findings of this DESI the following conclusions are provided:

- The surface fill materials comprised clay, gravel and minor traces of demolition fragments, at the locations investigated. This fill was underlain by natural clay.
- The soils at the locations sampled and analysed did not contain concentrations of TRHs, BTEX, PAHs, OCPs, OPPs, PCBs and heavy metals that were greater than the Commercial/Industrial D land use criteria, at the time tested, with the following exception;
  - Benzo(a)pyrene concentrations were detected above the EIL D criteria in sample QC2 (replicate of BH4/0.1-0.3).

  However, benzo(a)pyrene concentrations in soil were all below the HIL D. Therefore, it is considered that further investigation or remediation of EIL D exceedances is not required in order to meet land use suitability for Commercial/Industrial D.
- The assessment results indicate that the site subject to this DESI is suitable for Commercial/Industrial D land use, consistent with a General Industrial (IN1) zoning.
- This report was prepared in general accordance with the requirements of a Stage 1 and 2 Detailed Environmental Site investigation in the NSW EPA Guidelines for *"Consultants Reporting on Contaminated Sites"* (2020).

These conclusions are made within the limitations of the work, which has been undertaken. A statement of these limitations is included after **Section 11** of this report.

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11. References

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Limitation Statement

This DESI report has been prepared for the sole purpose of providing further assessment of the condition of soils at the site in accordance with generally accepted consulting practice. No other warranty or guarantee, expressed or implied is made as to the advice indicated in this report.

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Figures

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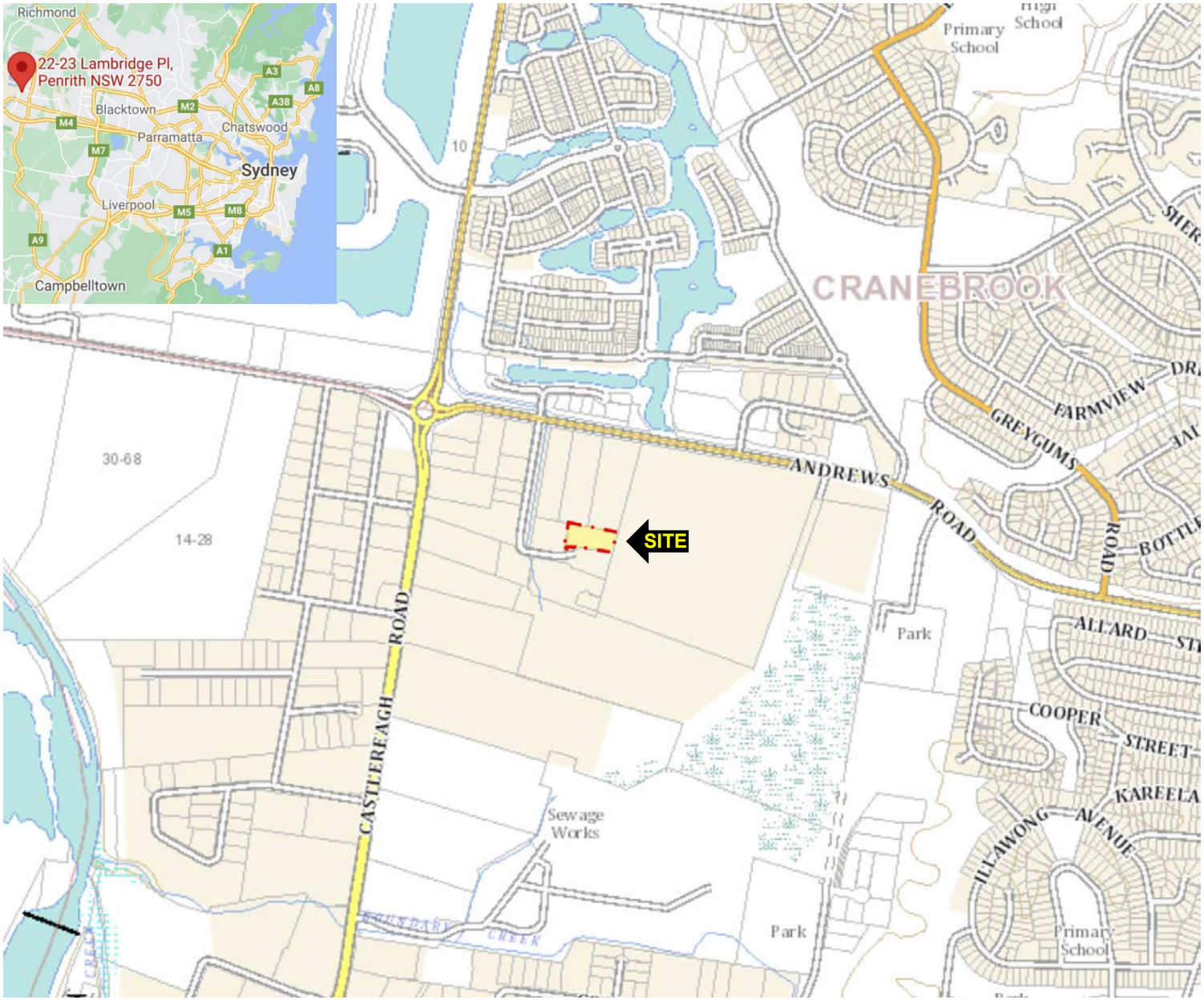

SCALE: **DRAWN TO SCALE AS SHOWN**

Not To Scale

NORTH

LEGEND:

Site Boundary

Images courtesy of Google Maps and SIX Maps

REV:	A
DATE:	27/08/2021
DRAWN:	GP
APPROVED:	GP
STATUS:	Final
DWG NO:	

CLIENT: **Vaughan Constructions**

PROJECT: **22-23 Lambridge Place, Penrith, NSW**

PROJECT NUMBER: LG2124.01

TITLE: **Site Location Plan**

FIGURE: **1** A4

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LEGEND:

Site Boundary

Stockpile

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REV:	A
DATE:	27/08/2021
DRAWN:	GP
APPROVED:	GP
STATUS:	Final
DWG NO:	

CLIENT: **Vaughan Constructions**

PROJECT: **22-23 Lambridge Place, Penrith, NSW**

PROJECT NUMBER: LG2124.01

TITLE: **Site Layout**

FIGURE: **2** A4

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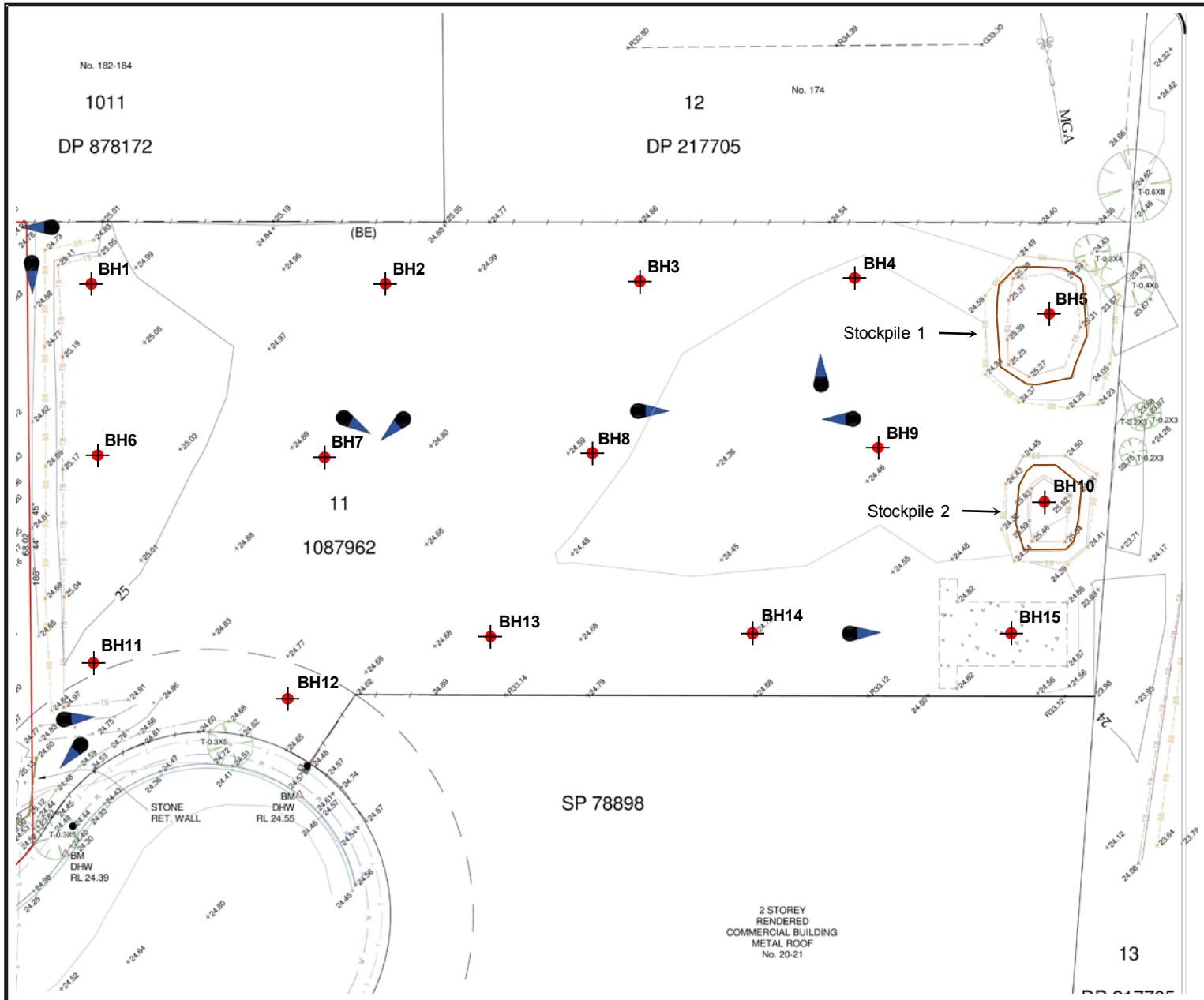

SCALE: DRAWN TO SCALE AS SHOWN

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NORTH

LEGEND:

Site Boundary

Stockpile

BH1 Borehole Location

Image courtesy of CBH Survey

LG CONSULT

REV:	A
DATE:	27/08/2021
DRAWN:	GP
APPROVED:	GP
STATUS:	Final
DWG NO:	

CLIENT: **Vaughan Constructions**

PROJECT: **22-23 Lambridge Place, Penrith, NSW**

PROJECT NUMBER: LG2124.01

TITLE: **Soil Sampling Locations**

FIGURE: **3** A4

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Tables

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Table A - Soil Analytical Results

Laboratory ID				SE222517.001	SE222517.031	SE222517.002	SE222517.003	SE222517.004	SE222517.005	SE222517.006	SE222517.007	SE222517.032	SE222517.008	SE222517.009	SE222517.010	SE222517.011	SE222517.012	SE222517.013	SE222517.014	SE222517.015	SE222517.016	SE222517.017	SE222517.018
Sample ID				BH1/0.1-0.3	QC1	BH1/0.5-1.0	BH2/0.1-0.3	BH2/0.5-1.0	BH3/0.1-0.3	BH3/0.5-1.0	BH4/0.1-0.3	QC2	BH4/0.5-1.0	BH5/0.1-0.3	BH5/0.5-1.0	BH6/0.1-0.3	BH6/0.5-1.0	BH7/0.1-0.3	BH7/0.5-1.0	BH8/0.1-0.3	BH8/0.5-1.0	BH9/0.1-0.3	BH9/0.5-1.0
Depth (m)				0.1-0.3	Duplicate of BH1/0.1-0.3	0.5-1.0	0.1-0.3	0.5-1.0	0.1-0.3	0.5-1.0	0.1-0.3	Duplicate of BH4/0.1-0.3	0.5-1.0	0.1-0.3	0.5-1.0	0.1-0.3	0.5-1.0	0.1-0.3	0.5-1.0	0.1-0.3	0.5-1.0	0.1-0.3	0.5-1.0
Soil Type				Fill: Clay & Gravel	Clay	Clay	Fill: Clay & Gravel	Clay	Fill: Clay & Gravel	Clay	Fill: Clay & Gravel	Clay	Clay	Fill: Clay & Gravel	Clay	Fill: Clay & Gravel	Clay	Fill: Clay & Gravel	Clay	Fill: Clay & Gravel	Clay	Fill: Clay & Gravel	Clay
Date Sampled				11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21	11/8/21
Compounds	Unit	EQL	NEPM 2013 Commercial and Industrial HIL D[1]	NEPM 2013 Commercial and Industrial EIL[3]																			
TRHs																							
TRH C6-C9	mg/kg	20	-	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	-	-	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
TRH C6-C10 less BTEX (F1)	mg/kg	25	260[2]	215	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
TRH C10-C14	mg/kg	20	-	-	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	-	-	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	-	-	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	-	-	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	-	-	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
TRH >C10-C16 less Naphthalene (F2)	mg/kg	25	-	170	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	-	1700	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	-	3300	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120
TRH >C10-C36	mg/kg	110	-	-	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110
TRH >C10-C40	mg/kg	210	-	-	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210
BTEX																							
Benzene	mg/kg	0.1	3[2]	75	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	-	165	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<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	-	135	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Xylene (m & p)	mg/kg	0.2	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Xylene (o)	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Xylene Total	mg/kg	0.3	230[2]	180	<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	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
PAHs																							
Naphthalene	mg/kg	0.1	-	370	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
1-methylnaphthalene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Acenaphthylene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Acenaphthene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Fluorene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Phenanthrene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.3	0.7	0.3	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Anthracene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.1	0.3	0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Fluoranthene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.8	2.1	0.8	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Pyrene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.7	1.9	0.7	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Benzo(a)anthracene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.2	0.7	0.3	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Chrysene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.2	0.7	0.2	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Benzo(b&j)fluoranthene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.3	0.8	0.3	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Benzo(k)fluoranthene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.2	0.5	0.2	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Benzo(a)pyrene	mg/kg	0.1	-	0.7	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.2	0.8	0.3	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.2	0.5	0.2	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Dibenzo(a&h)anthracene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Benzo(ghi)perylene	mg/kg	0.1	-	-	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	0.2	0.6	0.2	<0.1	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	N.A.
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0	TEQ	0.2	40	-	<0.2	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	0.3	1	0.3	<0.2	<0.2	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	N.A.
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR	TEQ (mg/kg)	0.3	40	-	<0.3	<0.3	N.A.	<0.3	N.A.	<0.3	<0.3	0.4	1.1	0.4	<0.3	<0.3	N.A.	<0.3	N.A.	<0.3	N.A.	<0.3	N.A.
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2	TEQ (mg/kg))	0.2	40	-	<0.2	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	0.4	1.1	0.4	<0.2	<0.2	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	N.A.
PAHs (Sum of total)	mg/kg	1	4,000	-	<0.8	<0.8	N.A.	<0.8	N.A.	<0.8	<0.8	3.3	9.7	3.4	<0.8	<0.8	N.A.	<0.8	N.A.	<0.8	N.A.	<0.8	N.A.
OCPs																							
Hexachlorobenzene (HCB)	mg/kg	0.1	80	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Lindane	mg/kg	0.1	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Heptachlor	mg/kg	0.1	50	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Aldrin	mg/kg	0.1	45	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Dieldrin	mg/kg	0.1	45	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Alpha BHC	mg/kg	0.1	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Beta BHC	mg/kg	0.1	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Delta BHC	mg/kg	0.1	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Heptachlor epoxide	mg/kg	0.1	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Alpha Endosulfan	mg/kg	0.2	2000	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Beta Endosulfan	mg/kg	0.1	2000	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Endosulfan sulphate	mg/kg	0.1	2000	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Gamma Chlordane	mg/kg	0.1	530	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Alpha Chlordane	mg/kg	0.1	530	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
trans-Nonachlor	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
p,p'-DDT	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
p,p'-DDE	mg/kg	0.1	3600	640	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
p,p'-DDD	mg/kg	0.1			N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
o,p'-DDT	mg/kg	0.2			N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
o,p'-DDE	mg/kg	0.1	3600	640	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
o,p'-DDD	mg/kg	0.1			N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Endrin	mg/kg	0.1	100	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Endrin Aldehyde	mg/kg	0.1	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Methoxychlor	mg/kg	0.1	2500	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Endrin Ketone	mg/kg	0.1	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Isodrin	mg/kg	0.1	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
Mirex	mg/kg	0.1	100	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.	<0.1	N.A.	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.1	N.A.
OPPs																							
Dichlorvos	mg/kg	0.5	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	N.A.	<0.5	N.A.	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	N.A.
Dimethoate	mg/kg	0.5	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	N.A.	<0.5	N.A.	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	N.A.
Diazinon (Dimpylate)	mg/kg	0.5	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	N.A.	<0.5	N.A.	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	N.A.
Fenitrothion	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Malathion	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2000	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Parathion-ethyl (Parathion)	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Bromophos Ethyl	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Methidathion	mg/kg	0.5	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	N.A.	<0.5	N.A.	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.5	N.A.
Ethion	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Azinphos-methyl (Guthion)	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
PCBs																							
Arochlor 1016	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Arochlor 1221	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Arochlor 1232	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Arochlor 1242	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Arochlor 1248	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Arochlor 1254	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Arochlor 1260	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Arochlor 1262	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Arochlor 1268	mg/kg	0.2	-	-	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.	<0.2	N.A.	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<0.2	N.A.
Total PCBs (Arochlors)	mg/kg	1	7	-	N.A.	N.A.	N.A.	N.A.	N.A.	<1	N.A.	<1	N.A.	<1	<1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	<1	N.A.
Metals																							
Arsenic	mg/kg	3	3000	160	2	2	2	1	2	3	2	5	4	1	4	3	2	2	2	4	4	4	6
Cadmium	mg/kg	0.3	900	-	<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	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium	mg/kg	0.3	3600	530	7.1	24	7.6	5.9	6.6	8.5	9	18	13	9.2	36	18	8.2	11	7.6	7.2	13	11	15
Copper	mg/kg	0.5	240000	400	2.9	31	3.1	2.4	2.7	7.6	9.7	15	13	7.6	17	9.9	4.8	11	3.4	3.1	15	11	21
Lead	mg/kg	1	1500	1800	6	12	5	4	4	8	7	16	14	6	13	9	6	7	6	5	14	9	15
Mercury	mg/kg	0.01	730	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	mg/kg	0.5	6000	600	2.8	27	2.9	2.7	2.9	6.7	20	15	9.5	8.6	40	17	5.3	13	3.7	3.3	12	7.2	35
Zinc	mg/kg	0.5	400000	1400	9.3	48	10	9.3	10	18	19	36	28	17	40	29	13	28	12	11	38	23	55
Asbestos																							
Asbestos Detected - Fibre Identification in soil	No unit	0.01	No Detected	-	No	N.A.	N.A.	No	N.A.	No	N.A.	No	N.A.	No	N.A.	N.A.	No	N.A.	No	N.A.	No	N.A.	No
Estimated Fibres - Fibre Identification in soil	%w/w	0.01	0.01	-	<0.01	N.A.	N.A.	<0.01	N.A.	<0.01	N.A.	<0.01	N.A.	<0.01	N.A.	N.A.	<0.01	N.A.	<0.01	N.A.	<0.01	N.A.	<0.01

NOTES:
All concentrations are in mg/kg
(1) - Table 1A(1), HIL Column 3 - Health Based Investigation Levels for Commercial/Industrial
(2) - Table 1A(3), HSL D Column 3 (Sand 0 m to <1 m) - Soil HSLs for Vapour Intrusion for
(3) - Tables 1B(1), 1B(2), 1B(3), 1B(4), 1B(5) and 1B(6), EILs and ESLs - Commercial/Industrial (NEPC, 2013)
EQL - laboratory Estimated Quantitation Limit
"-" indicates that the criteria is not applicable for these analytes
< Value = Concentration less than laboratory EQL
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Table A - Soil Analytical Results

Laboratory ID					SE222517.019	SE222517.020	SE222517.021	SE222517.022	SE222517.023
Sample ID					BH10/0.1-0.3	BH10/0.5-1.0	BH11/0.1-0.3	BH11/0.5-1.0	BH12/0.1-0.3
Depth (m)					0.1-0.3	0.5-1.0	0.1-0.3	0.5-1.0	0.1-0.3
Soil Type					Fill: Clay & Gravel	Clay	Fill: Clay & Gravel	Clay	Fill: Clay & Gravel
Date Sampled					11/8/21	11/8/21	11/8/21	11/8/21	11/8/21
Compounds	Unit	EQL	NEPM 2013 Commercial and Industrial HIL D[1]	NEPM 2013 Commercial and Industrial EIL[3]					
TRHs									
TRH C6-C9	mg/kg	20	-	-	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	-	-	<25	<25	<25	<25	<25
TRH C6-C10 less BTEX (F1)	mg/kg	25	260[2]	215	<25	<25	<25	<25	<25
TRH C10-C14	mg/kg	20	-	-	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	-	-	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	-	-	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	-	-	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	-	-	<25	<25	<25	<25	<25
TRH >C10-C16 less Naphthalene (F2)	mg/kg	25	-	170	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	-	1700	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	-	3300	<120	<120	<120	<120	<120
TRH >C10-C36	mg/kg	110	-	-	<110	<110	<110	<110	<110
TRH >C10-C40	mg/kg	210	-	-	<210	<210	<210	<210	<210
BTEX									
Benzene	mg/kg	0.1	3[2]	75	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	-	165	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	-	135	<0.1	<0.1	<0.1	<0.1	<0.1
Xylene (m & p)	mg/kg	0.2	-	-	<0.2	<0.2	<0.2	<0.2	<0.2
Xylene (o)	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Xylene Total	mg/kg	0.3	230[2]	180	<0.3	<0.3	<0.3	<0.3	<0.3
PAHs									
Naphthalene	mg/kg	0.1	-	370	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	-	0.7	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a&h)anthracene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0	TEQ	0.2	40	-	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR	TEQ (mg/kg)	0.3	40	-	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2	TEQ (mg/kg)	0.2	40	-	<0.2	<0.2	<0.2	<0.2	<0.2
PAHs (Sum of total)	mg/kg	1	4,000	-	<0.8	<0.8	<0.8	<0.8	<0.8
OCPs									
Hexachlorobenzene (HCB)	mg/kg	0.1	80	-	<0.1	N.A.	<0.1	N.A.	N.A.
Lindane	mg/kg	0.1	-	-	<0.1	N.A.	<0.1	N.A.	N.A.
Heptachlor	mg/kg	0.1	50	-	<0.1	N.A.	<0.1	N.A.	N.A.
Aldrin	mg/kg	0.1	45	-	<0.1	N.A.	<0.1	N.A.	N.A.
Dieldrin	mg/kg	0.1	45	-	<0.2	N.A.	<0.2	N.A.	N.A.
Alpha BHC	mg/kg	0.1	-	-	<0.1	N.A.	<0.1	N.A.	N.A.
Beta BHC	mg/kg	0.1	-	-	<0.1	N.A.	<0.1	N.A.	N.A.
Delta BHC	mg/kg	0.1	-	-	<0.1	N.A.	<0.1	N.A.	N.A.
Heptachlor epoxide	mg/kg	0.1	-	-	<0.1	N.A.	<0.1	N.A.	N.A.
Alpha Endosulfan	mg/kg	0.2	2000	-	<0.2	N.A.	<0.2	N.A.	N.A.
Beta Endosulfan	mg/kg	0.1	2000	-	<0.2	N.A.	<0.2	N.A.	N.A.
Endosulfan sulphate	mg/kg	0.1	2000	-	<0.1	N.A.	<0.1	N.A.	N.A.
Gamma Chlordane	mg/kg	0.1	530	-	<0.1	N.A.	<0.1	N.A.	N.A.
Alpha Chlordane	mg/kg	0.1	530	-	<0.1	N.A.	<0.1	N.A.	N.A.
trans-Nonachlor	mg/kg	0.2	-	-	<0.1	N.A.	<0.1	N.A.	N.A.
p,p'-DDT	mg/kg	0.2	3600	640	<0.1	N.A.	<0.1	N.A.	N.A.
p,p'-DDE	mg/kg	0.1			<0.1	N.A.	<0.1	N.A.	N.A.
p,p'-DDD	mg/kg	0.1			<0.1	N.A.	<0.1	N.A.	N.A.
o,p'-DDT	mg/kg	0.2	3600	640	<0.1	N.A.	<0.1	N.A.	N.A.
o,p'-DDE	mg/kg	0.1			<0.1	N.A.	<0.1	N.A.	N.A.
o,p'-DDD	mg/kg	0.1			<0.1	N.A.	<0.1	N.A.	N.A.
Endrin	mg/kg	0.1	100	-	<0.2	N.A.	<0.2	N.A.	N.A.
Endrin Aldehyde	mg/kg	0.1	-	-	<0.1	N.A.	<0.1	N.A.	N.A.
Methoxychlor	mg/kg	0.1	2500	-	<0.1	N.A.	<0.1	N.A.	N.A.
Endrin Ketone	mg/kg	0.1	-	-	<0.1	N.A.	<0.1	N.A.	N.A.
Isodrin	mg/kg	0.1	-	-	<0.1	N.A.	<0.1	N.A.	N.A.
Mirex	mg/kg	0.1	100	-	<0.1	N.A.	<0.1	N.A.	N.A.
OPPs									
Dichlorvos	mg/kg	0.5	-	-	<0.5	N.A.	<0.5	N.A.	N.A.
Dimethoate	mg/kg	0.5	-	-	<0.5	N.A.	<0.5	N.A.	N.A.
Diazinon (Dimpylate)	mg/kg	0.5	-	-	<0.5	N.A.	<0.5	N.A.	N.A.
Fenitrothion	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Malathion	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2000	-	<0.2	N.A.	<0.2	N.A.	N.A.
Parathion-ethyl (Parathion)	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Bromophos Ethyl	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Methidathion	mg/kg	0.5	-	-	<0.5	N.A.	<0.5	N.A.	N.A.
Ethion	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Azinphos-methyl (Guthion)	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
PCBs									
Arochlor 1016	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Arochlor 1221	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Arochlor 1232	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Arochlor 1242	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Arochlor 1248	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Arochlor 1254	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Arochlor 1260	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Arochlor 1262	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Arochlor 1268	mg/kg	0.2	-	-	<0.2	N.A.	<0.2	N.A.	N.A.
Total PCBs (Arochlors)	mg/kg	1	7	-	<1	N.A.	<1	N.A.	N.A.
Metals									
Arsenic	mg/kg	3	3000	160	2	3	2	2	2
Cadmium	mg/kg	0.3	900	-	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium	mg/kg	0.3	3600	530	38	31	7.2	7.3	8.2
Copper	mg/kg	0.5	240000	400	64	46	2.9	3.6	5.6
Lead	mg/kg	1	1500	1800	8	10	5	6	7
Mercury	mg/kg	0.01	730	-	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	mg/kg	0.5	6000	600	110	81	3	3.4	4.6
Zinc	mg/kg	0.5	400000	1400	65	56	9.8	11	13
Asbestos									
Asbestos Detected - Fibre Identification in soil	No unit	0.01	No Detected	-	No	N.A.	No	N.A.	No
Estimated Fibres - Fibre Identification in soil	%w/w	0.01	0.01	-	<0.01	N.A.	<0.01	N.A.	<0.01

NOTES:
All concentrations are in mg/kg
(1) - Table 1A(1), HIL Column 3 - Health Based Investigation Levels for Commercial/Industrial
(2) - Table 1A(3), HSL D Column 3 (Sand 0 m to <1 m) - Soil HSLs for Vapour Intrusion for
(3) - Tables 1B(1), 1B(2), 1B(3), 1B(4), 1B(5) and 1B(6), EILs and ESLs - Commercial/Industrial (NEPC, 2013)
EQL - laboratory Estimated Quantitation Limit
"-" indicates that the criteria is not applicable for these analytes
< Value = Concentration less than laboratory EQL

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Table B - Soil RPD Values

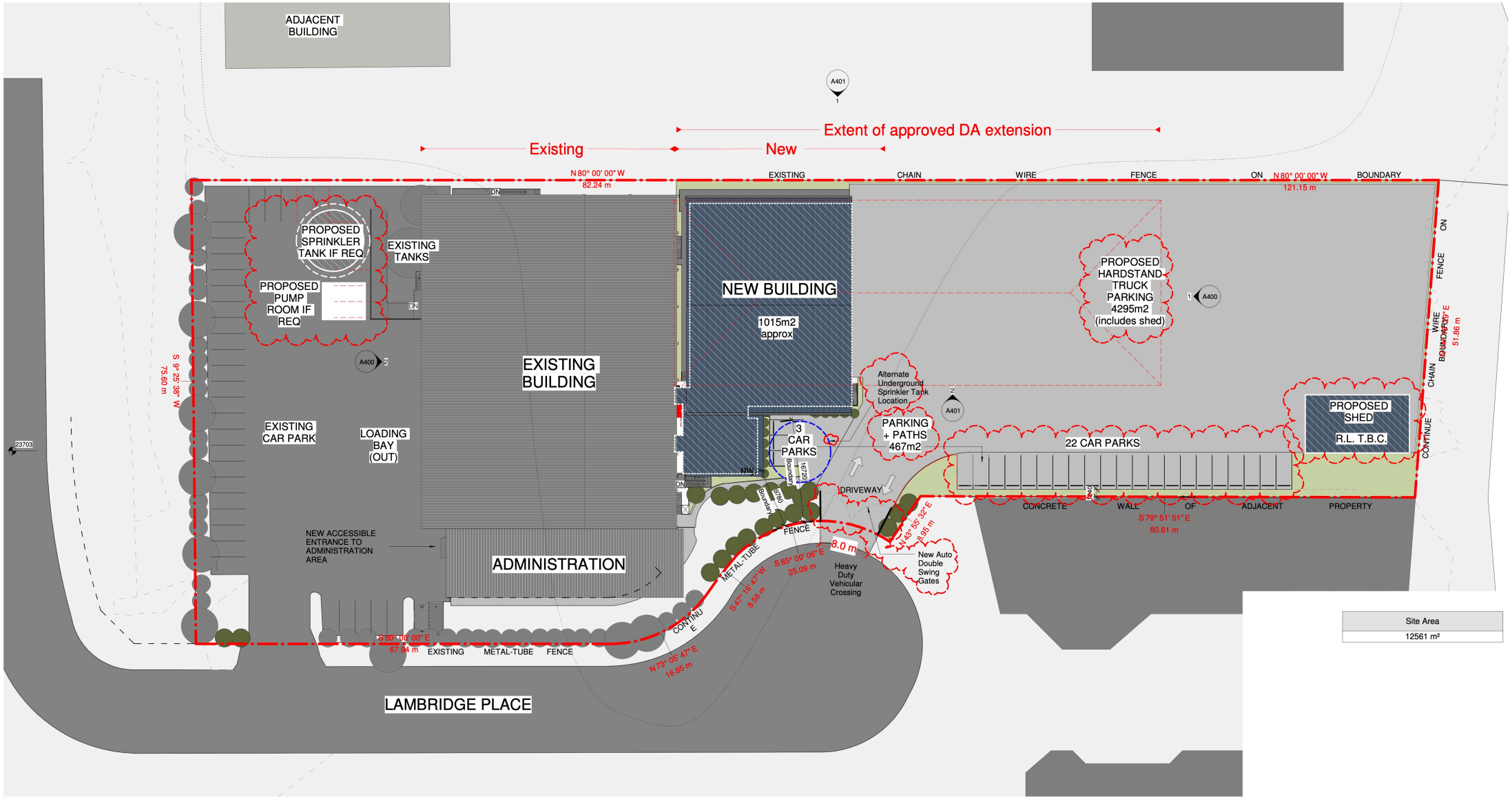
Borehole		BH1			BH5		
Sample ID		BH1/0.5	QC1	RPD	BH4/0.1-0.3	QC2	RPD
Depth (mBGS)		0.1-0.3			0.1-0.3		
Date Sampled		11/8/21			11/8/21		
Compounds	**EQL/PQL**						
TRHs							
TRH C6-C9	20	<20	<20	NA	<20	<20	NA
TRH C6-C10	25	<25	<25	NA	<25	<25	NA
TPH C6-C10 less BTEX (F1)	25	<25	<25	NA	<25	<25	NA
TRH C10-C14	20	<20	<20	NA	<20	<20	NA
TRH C15-C28	45	<45	<45	NA	<45	<45	NA
TRH C29-C36	45	<45	<45	NA	<45	<45	NA
TRH C37-C40	100	<100	<100	NA	<100	<100	NA
TRH >C10-C16 (F2)	25	<25	<25	NA	<25	<25	NA
TRH >C10-C16 less Naphthalene (F2)	25	<25	<25	NA	<25	<25	NA
TRH >C16-C34	90	<90	<90	NA	<90	<90	NA
TRH >C34-C40	120	<120	<120	NA	<120	<120	NA
TRH >C10-C36	110	<110	<110	NA	<110	<110	NA
TRH >C10-C40	210	<210	<210	NA	<210	<210	NA
BTEX							
Benzene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Ethylbenzene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Toluene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Xylene (m & p)	0.2	<0.2	<0.2	NA	<0.2	<0.2	NA
Xylene (o)	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Xylene Total	0.1	<0.3	<0.3	NA	<0.3	<0.3	NA
PAHs							
Naphthalene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
2-methylnaphthalene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
1-methylnaphthalene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Acenaphthylene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Acenaphthene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Fluorene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Phenanthrene	0.1	<0.1	<0.1	NA	0.3	0.7	**173%**
Anthracene	0.1	<0.1	<0.1	NA	0.1	0.3	**143%**
Fluoranthene	0.1	<0.1	<0.1	NA	0.8	2.1	**90%**
Pyrene	0.1	<0.1	<0.1	NA	0.7	1.9	**92%**
Benzo(a)anthracene	0.1	<0.1	<0.1	NA	0.2	0.7	**111%**
Chrysene	0.1	<0.1	<0.1	NA	0.2	0.7	**111%**
Benzo(b&j)fluoranthene	0.1	<0.1	<0.1	NA	0.3	0.8	**91%**
Benzo(k)fluoranthene	0.1	<0.1	<0.1	NA	0.2	0.5	**117%**
Benzo(a)pyrene	0.1	<0.1	<0.1	NA	0.2	**0.8**	**120%**
Indeno(1,2,3-cd)pyrene	0.1	<0.1	<0.1	NA	0.2	0.5	**117%**
Dibenzo(a&h)anthracene	0.1	<0.1	<0.1	NA	<0.1	<0.1	NA
Benzo(ghi)perylene	0.1	<0.1	<0.1	NA	0.2	0.6	**100%**
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=0	0.2	<0.2	<0.2	NA	0.3	1	**108%**
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR	0.05	<0.3	<0.3	NA	0.4	1.1	**93%**
Carcinogenic PAHs (as BaP TEQ)-assume results <LOR=LOR/2	0.1	<0.2	<0.2	NA	0.4	1.1	**93%**
PAHs (Sum of total)	0.1	<0.8	<0.8	NA	3.3	9.7	**98%**
PCBs							
Arochlor 1016	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Arochlor 1221	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Arochlor 1232	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Arochlor 1242	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Arochlor 1248	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Arochlor 1254	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Arochlor 1260	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Arochlor 1262	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Arochlor 1268	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
OPPs							
Dichlorvos	0.5	N.A.	N.A.	NA	<0.5	N.A.	NA
Dimethoate	0.5	N.A.	N.A.	NA	<0.5	N.A.	NA
Diazinon (Dimpylate)	0.5	N.A.	N.A.	NA	<0.5	N.A.	NA
Fenitrothion	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Malathion	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Parathion-ethyl (Parathion)	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Bromophos Ethyl	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Methidathion	0.5	N.A.	N.A.	NA	<0.5	N.A.	NA
Ethion	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Azinphos-methyl (Guthion)	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
OCPs							
Hexachlorobenzene (HCB)	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Alpha BHC	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Lindane	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Heptachlor	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Aldrin	0.1	N.A.	N.A.	NA	<0.2	N.A.	NA
Beta BHC	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Delta BHC	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Heptachlor epoxide	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
o,p'-DDE	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Alpha Endosulfan	0.2	N.A.	N.A.	NA	<0.2	N.A.	NA
Gamma Chlordane	0.1	N.A.	N.A.	NA	<0.2	N.A.	NA
Alpha Chlordane	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
trans-Nonachlor	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
p,p'-DDE	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Dieldrin	0.2	N.A.	N.A.	NA	<0.1	N.A.	NA
Endrin	0.2	N.A.	N.A.	NA	<0.1	N.A.	NA
o,p'-DDD	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
o,p'-DDT	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Beta Endosulfan	0.2	N.A.	N.A.	NA	<0.1	N.A.	NA
p,p'-DDD	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
p,p'-DDT	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Endosulfan sulphate	0.1	N.A.	N.A.	NA	<0.2	N.A.	NA
Endrin Aldehyde	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Methoxychlor	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Endrin Ketone	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Isodrin	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Mirex	0.1	N.A.	N.A.	NA	<0.1	N.A.	NA
Metals							
Arsenic	3	2	2	0%	5	4	22%
Cadmium	0.3	<0.3	<0.3	NA	<0.3	<0.3	NA
Chromium	0.3	7.1	24	**109%**	18	13	**32%**
Copper	0.5	2.9	31	**166%**	15	13	14%
Lead	1	6	12	**67%**	16	14	13%
Mercury	0.0	<0.05	<0.05	NA	<0.05	<0.05	NA
Nickel	0.5	2.8	27	**162%**	15	9.5	**45%**
Zinc	0.5	9.3	48	**135%**	36	28	25%

NOTES:
All concentrations are in mg/kg
RPDs have only been considered where a concentration is greater than 5 times the EQL.

RPD result exceeding acceptance criteria for organics - 50%; inorganics - 30%
RPD results exceeding the acceptance criteria but were disregarded if primary or duplicate sample results were <5 x EQL
Reference: Australian Standard, Guide to the Investigation and Sampling of Potentially Contaminated Soil (AS4482.1-2005 and AS4482.2-1999)
#/# - Primary lab EQL/Secondary lab EQL
"-" indicates that these samples were not analysed
NA - Calculation not applicable or RPD=0
Intra Dup - Intra-laboratory duplicate sample
Inter Dup - Inter-laboratory duplicate sample

Appendix A – Proposed Development Plans

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021



1 00 Site
1 : 300

NOTE: THE LOCATION OF PROPERTY ALIGNMENTS IS DETERMINED FROM SURVEY INFORMATION PROVIDED BY SURVEYOR.
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Member Nominated Architect

Expansion of Existing Industrial Facility
24-27 Lambridge Place, Penrith, 2750
LOT 1 / DP 1087962

REVISION	DESCRIPTION	DATE
1	ISSUED FOR CLIENT REVIEW	22.02.202 1
2	ISSUED FOR PRICING	15.04.202 1

ARCHITECT: PACE ARCHITECTS
BUILDER / PROJECT MANAGER: VAUGHAN CONSTRUCTIONS Established 1955
CLIENT: FOOD BOSS

GRAPHIC SCALE: 1:2

purpose: DA Application Revision

Proposed Site

scale	1 : 300 A1
project no	210208
date	15.04.2021
dwn	PGT
dwg no	210208 - A101
issue	2

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

Appendix B – Site Photographs

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

Photo 1: Looking southwest towards Lot 12

Photo 2: Looking to northwest towards Lot 12

Photo 3: Looking east

Photo 4: Looking southwest

Photo 5: Looking northwest

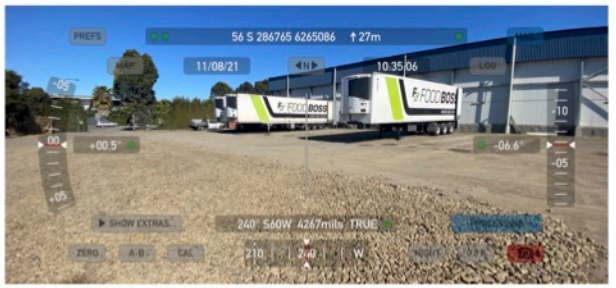


Photo 6: Looking south towards site entrance

LG CONSULT

REV:	**A**
DATE:	**13/08/2021**
DRAWN:	**GP**
APPROVED:	**GP**
STATUS:	**Final**
DATE:	**13/08/2021**
DRAWN:	**GP**

CLIENT: **Vaughan Constructions**

PROJECT: **22-23 Lambridge Place, Penrith, NSW**

PROJECT NUMBER: **LG2124.02**

PROJECT: **22-23 Lambridge Place, Penrith, NSW**

TITLE: **Site Photographs**

APPENDIX: **B**

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

Photo 7: BH2

Photo 8: BH3

Photo 9: BH4

Photo 10: BH5 at Stockpile 1

Photo 11: Drilling at BH10 at Stockpile 2

Photo 12: Drilling at BH4

REV:	**A**
DATE:	**13/08/2021**
DRAWN:	**GP**
APPROVED:	**GP**
STATUS:	**Final**
DATE:	**13/08/2021**
DRAWN:	**GP**

CLIENT: **Vaughan Constructions**

PROJECT: **22-23 Lambridge Place, Penrith, NSW**

PROJECT NUMBER: **LG2124.02**

PROJECT: **22-23 Lambridge Place, Penrith, NSW**

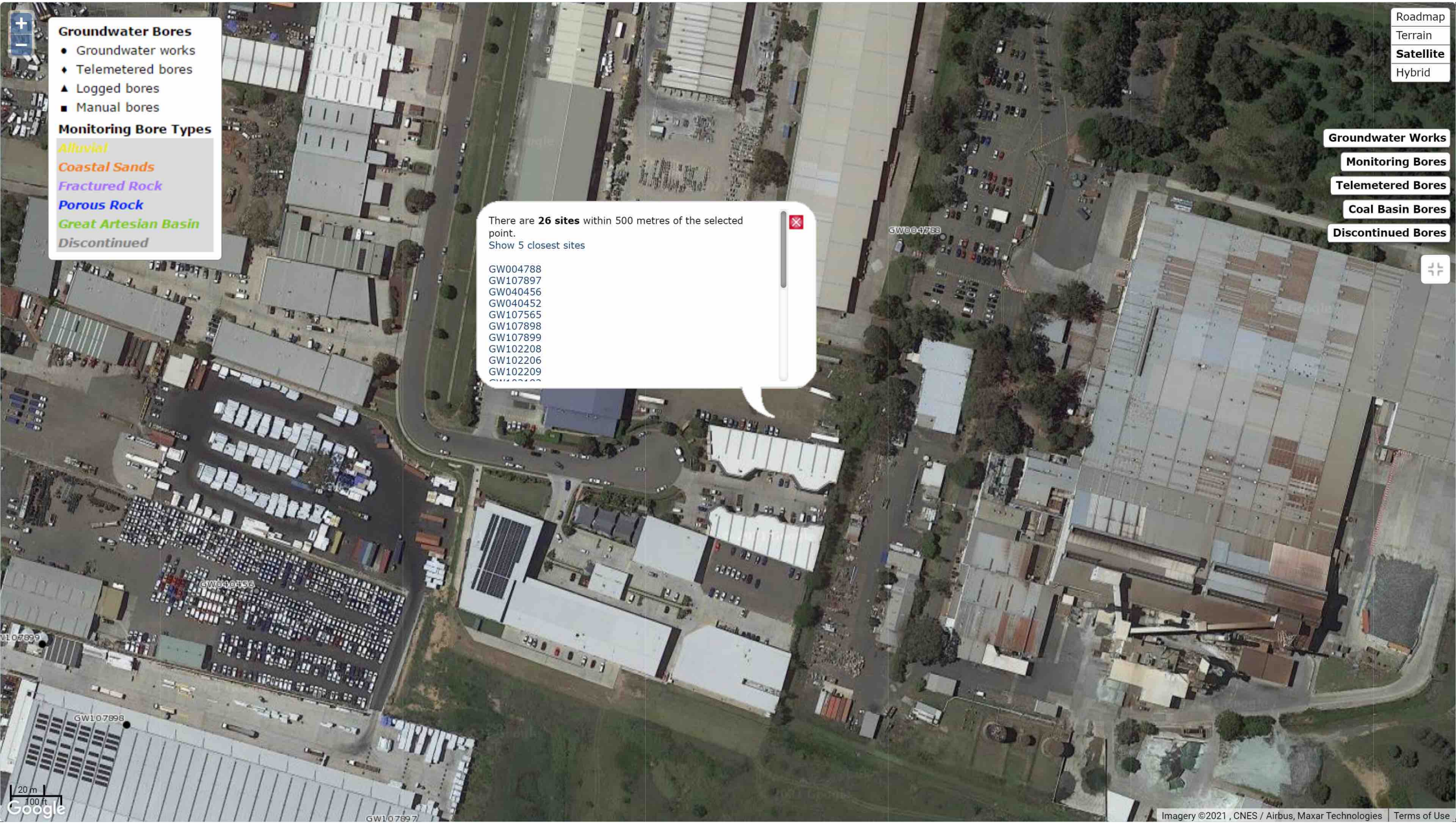
TITLE: **Site Photographs**

APPENDIX: **B**

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

Appendix C – Registered Groundwater Bore Search

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021



Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

WaterNSW
Work Summary

GW004788

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): GENERAL USE

Work Type: Well
Work Status: Supply Obtained
Construct.Method:
Owner Type: Private

Commenced Date: | **Final Depth:** 9.70 m
Completion Date: | **Drilled Depth:**

Contractor Name: (None)
Driller:
Assistant Driller:

Property: | **Standing Water Level (m):**
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	89
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:** 9030-4S
River Basin: 212 - HAWKESBURY RIVER | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6265147.000 | **Latitude:** 33°43'56.3"S
Elevation Source: (Unknown) | **Easting:** 286893.000 | **Longitude:** 150°41'59.2"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Nil	0.00	2.40	1219			
1	1	Casing	Brick	2.40	9.70	1219			

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
9.70	9.70	0.00	(Unknown)	6.00					

Remarks

19/02/1975: SWL APPROX. 3.66M IN WET SEASON

***** End of GW004788 *****

WaterNSW
Work Summary

GW040452

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): IRRIGATION

Work Type: Well
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date:
Final Depth: 8.30 m
Drilled Depth:

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	89
Licensed:			

Region: 10 - Sydney South Coast
River Basin: 212 - HAWKESBURY RIVER
Area/District:
CMA Map: 9030-4S
Grid Zone:
Scale:

Elevation: 55.32 m (A.H.D.)
Elevation Source: Unknown
Northing: 6265333.000
Easting: 286940.000
Latitude: 33°43'50.3"S
Longitude: 150°42'01.2"E

GS Map: -
MGA Zone: 56
Coordinate Source: GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Concrete Cylnder	0.00	0.00	1829			

***** End of GW040452 *****

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW
Work Summary

GW040455

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): IRRIGATION

Work Type: Well
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date:
Final Depth: 8.90 m
Drilled Depth:

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	89
Licensed:			

Region: 10 - Sydney South Coast
River Basin: 212 - HAWKESBURY RIVER
Area/District:
CMA Map: 9030-4S
Grid Zone:
Scale:

Elevation: 54.65 m (A.H.D.)
Elevation Source: Unknown
Northing: 6265011.000
Easting: 286329.000
Latitude: 33°44'00.3"S
Longitude: 150°41'37.2"E

GS Map: -
MGA Zone: 56
Coordinate Source: GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Brick, Concrete Cylnder	0.00	0.00	1829			

***** End of GW040455 *****

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW
Work Summary

GW040456

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): NOT KNOWN

Work Type: Well
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date:
Final Depth: 8.40 m
Drilled Depth:

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREAGH	89
Licensed:			

Region: 10 - Sydney South Coast
River Basin: 212 - HAWKESBURY RIVER
Area/District:
CMA Map: 9030-4S
Grid Zone:
Scale:

Elevation: 54.41 m (A.H.D.)
Elevation Source: Unknown
Northing: 6264954.000
Easting: 286537.000
Latitude: 33°44'02.3"S
Longitude: 150°41'45.2"E

GS Map: -
MGA Zone: 56
Coordinate Source: GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Concrete Cylnder	0.00	0.00	1219			

***** End of GW040456 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW
Work Summary

GW102180

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Rotary Air
Owner Type: Private

Commenced Date: **Final Depth:** 9.20 m
Completion Date: 16/12/1998 **Drilled Depth:** 9.20 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: Dean John Milgate
Assistant Driller:

Property: **Standing Water Level (m):** 6.600
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):** 0.200

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6264635.000 **Latitude:** 33°44'12.8"S
Elevation Source: Unknown **Easting:** 286654.000 **Longitude:** 150°41'49.5"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	6.30	210			Rotary Air
1		Hole	Hole	6.30	9.20	187			Rotary Air
1		Annulus	Waterworn/Rounded	5.20	9.20				Graded
1	1	Casing	Pvc Class 18	-1.00	9.20	63			Seated on Bottom, Screwed
1	1	Opening	Screen - Wire Wound	6.20	9.20	63		0	PVC Class 18, Screwed, A: 4.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
6.30	9.20	2.90	Unknown	6.60		0.20	9.20	25:00:00	400.00

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	6.30	6.30	SAND AND SILT	Sand	
6.30	9.20	2.90	GRAVEL	Gravel	

WaterNSW
Work Summary

GW102181

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Rotary Air
Owner Type: Private

Commenced Date: | **Final Depth:** 9.30 m
Completion Date: 16/12/1998 | **Drilled Depth:** 9.30 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: Dean John Milgate
Assistant Driller:

Property: | **Standing Water Level (m):** 6.500
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):** 0.100

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6264635.000 | **Latitude:** 33°44'12.8"S
Elevation Source: Unknown | **Easting:** 286655.000 | **Longitude:** 150°41'49.5"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	6.40	210			Rotary Air
1		Hole	Hole	6.40	9.30	187			Rotary Air
1		Annulus	Waterworn/Rounded	5.00	9.30				Graded
1	1	Casing	Pvc Class 18	0.00	9.30	63			Seated on Bottom, Screwed
1	1	Opening	Screen - Wire Wound	6.30	9.30	63		0	PVC Class 18, Screwed, A: 4.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
6.40	9.30	2.90	Unknown	6.50		0.10	9.30		350.00

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	6.40	6.40	SAND, SILT AND CLAY	Sand	
6.40	9.30	2.90	GRAVEL	Gravel	

WaterNSW
Work Summary

GW102182

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date: | **Final Depth:** 9.10 m
Completion Date: 03/09/1998 | **Drilled Depth:**

Contractor Name: (None)
Driller:
Assistant Driller:

Property: | **Standing Water Level (m):** 6.820
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6264635.000 | **Latitude:** 33°44'12.8"S
Elevation Source: Unknown | **Easting:** 286655.000 | **Longitude:** 150°41'49.5"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	9.10	200			(Unknown)
1		Annulus	Bentonite/Grout	0.00	4.10	200			
1		Annulus	Bentonite	4.10	5.10	200			
1		Annulus	(Unknown)	5.10	9.10				
1	1	Casing	Pvc Class 18	-0.52	9.10	50			
1	1	Opening	Slots - Horizontal	6.10	9.10	50		0	PVC Class 18

Remarks

03/09/1998: Form A Remarks:
BORE ID MW05-A
BENTONITE SEAL 4.1 - 5.1 m.
GROUT AND BENTONITE 0 - 4.1 m.

***** End of GW102182 *****

WaterNSW
Work Summary

GW102183

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date: | **Final Depth:** 10.50 m
Completion Date: 02/09/1998 | **Drilled Depth:** 10.50 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property: | **Standing Water Level (m):** 7.050
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6264635.000 | **Latitude:** 33°44'12.8"S
Elevation Source: Unknown | **Easting:** 286655.000 | **Longitude:** 150°41'49.5"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	10.50	200			(Unknown)
1		Annulus	Bentonite/Grout	0.00	5.70	200			
1		Annulus	Bentonite	5.70	6.10	200			
1		Annulus	(Unknown)	6.10	10.50				
1	1	Casing	Pvc Class 18	-0.43	10.50	50			
1	1	Opening	Slots - Horizontal	7.50	10.50	50		0	PVC Class 18

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	FILL, SILTY SAND	Sand	
1.00	1.10	0.10	CONCRETE	Fill	
1.10	1.30	0.20	FILL, SILTY SAND	Sand	
1.30	1.80	0.50	SAND, SILTY, CLAYEY	Clayey Sand	
1.80	3.50	1.70	SAND, CLAYEY, ORANGE	Clayey Sand	
3.50	5.80	2.30	SAND,SILTY, CLAYEY	Clayey Sand	
5.80	6.20	0.40	GRAVELS AND COBBLES	Gravel	
6.20	6.50	0.30	BOULDERS, BASALT	Basalt	
6.50	9.50	3.00	GRAVELS AND COBBLES	Gravel	
9.50	9.70	0.20	BOULDER, GRANITE	Granite	
9.70	10.50	0.80	GRAVELS AND COBBLES	Gravel	

Remarks

WaterNSW
Work Summary

GW102202

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date: | **Final Depth:** 9.00 m
Completion Date: 04/09/1998 | **Drilled Depth:**

Contractor Name: (None)
Driller:
Assistant Driller:

Property: | **Standing Water Level (m):** 6.210
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6264635.000 | **Latitude:** 33°44'12.8"S
Elevation Source: Unknown | **Easting:** 286655.000 | **Longitude:** 150°41'49.5"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	9.00	200			(Unknown)
1		Annulus	Bentonite/Grout	0.00	4.00	200			
1		Annulus	Bentonite	4.00	5.00	200			
1		Annulus	Waterworn/Rounded	5.00	9.00	200			Graded
1	1	Casing	Pvc Class 18	-0.20	9.00	50			
1	1	Opening	Slots - Horizontal	6.00	9.00	50		0	PVC Class 18

Remarks

04/09/1998: Form A Remarks:
REMARKS BORE ID MW06 -A
BENTONITE SEAL 4.0m - 5.0m, SAND BELOW
GROUT AND BENTONITE FROM 0 to 4.0 m.
GATIC COVER OVER BORE

***** End of GW102202 *****

WaterNSW
Work Summary

GW102206

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date: | **Final Depth:** 12.00 m
Completion Date: 10/09/1998 | **Drilled Depth:** 12.00 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property: | **Standing Water Level (m):** 7.070
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6264635.000 | **Latitude:** 33°44'12.8"S
Elevation Source: Unknown | **Easting:** 286655.000 | **Longitude:** 150°41'49.5"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	12.30	200			(Unknown)
1		Annulus	Bentonite/Grout	0.00	7.00	200			
1		Annulus	Bentonite	7.00	8.00	200			
1		Annulus	Waterworn/Rounded	8.00	12.00	200			Graded
1	1	Casing	Pvc Class 18	-0.48	12.00	50			
1	1	Opening	Slots - Horizontal	9.00	12.00	50		0	Mechanically Slotted, PVC Class 18

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	FILL.SAND,SILTY,GRAVELLY	Fill	
1.00	3.00	2.00	SAND, SILTY fine to medium grained trace of clay	Sand	
3.00	4.50	1.50	SAND, CLAYEY,SILTY fine grained	Sand	
4.50	5.50	1.00	SAND, SILTY fine to medium grained	Sand	
5.50	7.00	1.50	GRAVEL AND COBBLES	Gravel	
7.00	7.40	0.40	LARGE COBBLE, BOULDER, GRANITE	Granite	
7.40	12.00	4.60	GRAVEL AND COBBLES	Gravel	

Remarks

10/09/1998: Form A Remarks:
REMARKS BORE ID MW06 -B
END OF HOLE 12.3(BENTONITE SEAL TO 12.0 m?)

WaterNSW
Work Summary

GW102207

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date: | **Final Depth:** 9.50 m
Completion Date: 27/08/1998 | **Drilled Depth:**

Contractor Name: (None)
Driller:
Assistant Driller:

Property: | **Standing Water Level (m):** 6.850
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6264635.000 | **Latitude:** 33°44'12.8"S
Elevation Source: Unknown | **Easting:** 286655.000 | **Longitude:** 150°41'49.5"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	14.00	200			(Unknown)
1		Annulus	Bentonite/Grout	0.00	4.80	200	50		
1		Annulus	Bentonite	4.80	5.70	200			
1		Annulus	(Unknown)	5.70	9.50				
1	1	Casing	Pvc Class 18	-0.52	9.50	50			
1	1	Opening	Slots - Horizontal	6.50	9.50	50		0	Mechanically Slotted, PVC Class 18

Remarks

27/08/1998: Form A Remarks:
REMARKS. BORE ID MW07 -A
END OF HOLE 14.0m BACKFILLED WITH BENTONITE TO 9.5 ?
BENTONITE SEAL 4.8m - 5.7m
GROUT AND BENTONITE FROM 0 to 4.8 m.

***** End of GW102207 *****

WaterNSW
Work Summary

GW102208

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE
Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private
Commenced Date:
Completion Date: 27/08/1998
Final Depth: 14.85 m
Drilled Depth: 14.85 m
Contractor Name: (None)
Driller:
Assistant Driller:
Property:
GWMA:
GW Zone:
Standing Water Level (m): 6.490
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:
Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6264635.000
Easting: 286655.000
Latitude: 33°44'12.8"S
Longitude: 150°41'49.5"E
GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	14.85	200			(Unknown)
1		Annulus	Bentonite/Grout	0.00	10.00	200	50		
1		Annulus	Bentonite	10.00	11.00	200	50		
1		Annulus	Waterworn/Rounded	11.00	14.85	200	50		Graded
1	1	Casing	Pvc Class 18	-0.22	14.85	50			
1	1	Opening	Slots	11.85	14.85	50		0	Mechanically Slotted, PVC Class 18

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	SAND, SILTY	Sand	
0.30	1.50	1.20	SAND, SILTY, CLAYEY	Sand	
1.50	3.10	1.60	SAND, SILTY fine grained	Sand	
3.10	4.00	0.90	SAND, SILTY, CLAYEY,fine grained	Sand	
4.00	5.50	1.50	PED like structure banded 5-10%clay	(Unknown)	
5.50	5.75	0.25	SAND, medium grained	Sand	
5.75	9.70	3.95	GRAVEL AND COBBLES	Gravel	
9.70	14.40	4.70	GRAVEL AND SAND	Gravel	
14.40	14.50	0.10	GRAVEL AND CLAY	Gravel	
14.50	14.70	0.20	GRAVEL, SANDY	Gravel	
14.70	14.85	0.15	GRAVEL AND SHALE	Gravel	

Remarks

WaterNSW
Work Summary

GW102209

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 10/09/1998
Final Depth: 13.35 m
Drilled Depth: 13.70 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m): 6.710
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6264635.000
Easting: 286655.000
Latitude: 33°44'12.8"S
Longitude: 150°41'49.5"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	13.35	200			(Unknown)
1		Annulus	Bentonite/Grout	0.00	8.30	200	50		
1		Annulus	Bentonite	8.30	9.30	200	50		
1		Annulus	(Unknown)	9.30	13.35				
1	1	Casing	Pvc Class 18	-0.41	13.35	50			
1	1	Opening	Slots - Horizontal	10.35	13.35	50		0	Mechanically Slotted, PVC Class 18

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.50	0.50	SAND,SILTY fine, to medium gained	Sand	
0.50	1.50	1.00	SAND, SILTY, CLAYEY fine grained	Clayey Sand	
1.50	3.60	2.10	SAND, CLAYEY fine grained	Clayey Sand	
3.60	4.80	1.20	SAND, SILTY, CLAYEY light orange	Clayey Sand	
4.80	9.80	5.00	SAND. GRAVEL AND COBBLES within with possible large granite boulders	Sand	
9.80	11.10	1.30	POSSIBLE GRANITE BOULDER, fractured granite	Granite	
11.10	13.00	1.90	Sand and Gravel, Cobbles	Sand	
13.00	13.70	0.70	Sand, cobbles, Gravel and Shale	Sand	

Remarks

10/09/1998: Form A Remarks

WaterNSW
Work Summary

GW102210

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 01/12/1993

Final Depth: 11.40 m
Drilled Depth: 11.40 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:

Standing Water Level (m): 8.250
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:

CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown

Northing: 6264635.000
Easting: 286655.000

Latitude: 33°44'12.8"S
Longitude: 150°41'49.5"E

GS Map: -

MGA Zone: 56

Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	11.40	0			(Unknown)
1		Annulus	Concrete	0.00	0.23				
1		Annulus	Bentonite	0.23	1.80				
1	1	Casing	P.V.C.	0.00	11.40	50			
1	1	Opening	Slots - Horizontal	5.40	11.40	50		0	PVC, A: 4.00mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.23	0.23	Concrete	Fill	
0.23	11.40	11.17	SAND, SILTY loose	Sand	

Remarks

01/12/1993: Form A Remarks:
REMARKS BORE HOLE NUMBER MW - 01
CONCRETE 0.23m DEEP ON SURFACE. BORE CAPPED WITH LOCKABLE GATIC COVER
BENTONITE SEAL FROM 0.23m -1.80m
REVERSE CIRCULATION WITH MUD USED FROM 3.0m TO DEPTH
HARD BAND ENCOUNTERED AT 6.3m

WaterNSW
Work Summary

GW102211

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE
Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private
Commenced Date:
Completion Date: 30/11/1993
Final Depth: 10.60 m
Drilled Depth: 10.60 m
Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:
Property:
GWMA:
GW Zone:
Standing Water Level (m): 8.450
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast
CMA Map:
River Basin: - Unknown
Grid Zone:
Scale:
Area/District:
Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6264635.000
Easting: 286655.000
Latitude: 33°44'12.8"S
Longitude: 150°41'49.5"E
GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	10.60	0			(Unknown)
1		Annulus	Concrete	0.00	0.30				
1		Annulus	Bentonite	0.30	1.50				
1	1	Casing	P.V.C.	0.00	10.60	50			
1	1	Opening	Slots - Horizontal	4.60	10.60	50		0	PVC, A: 4.00mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	10.60	10.60	SAND,SILTY, loose dark red?brown med grained with some clay possible cobbles and boulders	Sand	

Remarks

30/11/1993: Form A Remarks:
REMARKS BORE HOLE NUMBER MW - 02
CONCRETE ON SURFACE TO AROUND 0.3m WITH LOCKABLE GATIC COVER ON BORE
BENTONITE SEAL FROM 0.3 -1.5m
HARD BAND ENCOUNTERED AT 7.0m DEPTH
REVERSE CIRCULATION WITH MUD USED FROM 3.0m TO DEPTH.

WaterNSW
Work Summary

GW102212

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 02/12/1993
Final Depth: 11.60 m
Drilled Depth: 11.60 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m): 8.200
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6264635.000
Easting: 286655.000
Latitude: 33°44'12.8"S
Longitude: 150°41'49.5"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	11.60	0			(Unknown)
1		Annulus	Bentonite	0.05	2.00				
1	1	Casing	P.V.C.	0.00	11.60	50			
1	1	Opening	Slots - Horizontal	5.60	11.60	50		0	PVC, A: 4.00mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.05	0.05	Bitumen	Fill	
0.05	11.60	11.55	SAND,SILTY loose	Sand	

Remarks

02/12/1993: Form A Remarks:
REMARKS BORE HOLE NUMBER MW -03
50 mm OF BITUMEN ON SURFACE.
LOCKABLE GATIC COVER OVER BORE HOLE
BENTONITE SEAL FROM 0.05m TO 2.0m
REVERSE CIRCULATION WITH MUD USED FROM 3.0m TO DEPTH.
11/01/2013: Nat Carling, 11-Jan-2013; Added rock type codes to driller's log & added missing information (based on existing data).

WaterNSW
Work Summary

GW102213

Licence:
Licence Status:
Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 26/11/1993
Final Depth: 12.80 m
Drilled Depth: 13.60 m

Contractor Name: ENGINEERING EXPLORATIONS PTY LTD
Driller:
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m): 8.470
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6264635.000
Easting: 286655.000
Latitude: 33°44'12.8"S
Longitude: 150°41'49.5"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	13.60	0			(Unknown)
1		Annulus	Concrete	0.00	0.20				
1		Annulus	Crushed Aggregate	0.20	2.40				
1		Annulus	Bentonite	2.40	4.40				
1	1	Casing	P.V.C.	0.00	12.80	50			
1	1	Opening	Slots - Horizontal	6.80	12.80	50		0	PVC, A: 4.00mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.50	1.50	SAND, SILTY	Sand	
1.50	2.00	0.50	SAND,CLAYEYloose< red?brown medium grained	Clayey Sand	
2.00	3.80	1.80	SAND,loose< orange/red,fine to medium grain	Sand	
3.80	4.40	0.60	GRAVEL,loose,light grey	Gravel	
4.40	13.60	9.20	SAND, loose orange/red,fine to medium grained	Sand	

Remarks

26/11/1993: Form A Remarks:
REMARKS BORE HOLE NUMBER MW - 04
CONCRETE ON SURFACE TO AROUND 0.2m BACKFILLED BELOW WITH SANDY LOAM
TO BENTONITE PELLETS FROM APPROX. 2.4m TO APPROX.4.4m
HESSIAN BAGS AND RAGS BELOW

WaterNSW
Work Summary

GW102239

Licence: 10BL158921
Licence Status: ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 31/08/1998
Final Depth: 9.40 m
Drilled Depth:

Contractor Name: (None)
Driller:
Assistant Driller:

Property: N/A NSW
GWMA: -
GW Zone: -
Standing Water Level (m): 6.780
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:	CUMBERLAND	CASTLEREAGH	Whole Lot 2//787827

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6264635.000
Easting: 286655.000
Latitude: 33°44'12.8"S
Longitude: 150°41'49.5"E

GS Map: -
MGA Zone: 56
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	9.40	200			(Unknown)
1		Annulus	Bentonite/Grout	0.00	4.40	200	50		
1		Annulus	Bentonite	4.40	5.40	200	50		
1		Annulus	(Unknown)	5.40	9.40				
1	1	Casing	Pvc Class 18	-0.50	9.40	50			
1	1	Opening	Slots - Horizontal	6.40	9.40	50		0	PVC Class 18

Remarks

31/08/1998: Form A Remarks:
Bore ID MW08-A
Bentonite seal from 4.4 to 5.4 m.
Grout and Bentonite from 0.0 to 4.4 m.

***** End of GW102239 *****

WaterNSW
Work Summary

GW107564

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status:
Construct.Method: Rotary Air
Owner Type:

Commenced Date: | **Final Depth:** 13.90 m
Completion Date: 24/11/2005 | **Drilled Depth:** 13.90 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: Brett Roy Wyatt
Assistant Driller:

Property: | **Standing Water Level (m):**
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2 787827
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6264600.000 | **Latitude:** 33°44'14.0"S
Elevation Source: Unknown | **Easting:** 286722.000 | **Longitude:** 150°41'52.1"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.80	228			Rotary - Air/Foam
1		Hole	Hole	5.80	13.90	187			Rotary - Air/Foam
1		Annulus	Waterworn/Rounded	0.50	13.90				Graded, Q:288.000m3
1	1	Casing	Pvc Class 18	0.00	7.30	60			Other, Screwed
1	1	Casing	Pvc Class 18	0.00	10.90	60			Other, Screwed
1	1	Opening	Screen	7.30	10.30	60		0	PVC Class 18, Screwed, A: 0.50mm
1	1	Opening	Screen	10.90	13.90	60		0	PVC Class 18, Screwed, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
5.80	13.90	8.10	Unknown				13.90		

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	ROAD BASE	Fill	
0.30	5.30	5.00	RED BROWN SILTY CLAY	Silty Clay	
5.30	5.80	0.50	RED BROWN SILTY CLAY/GRAVELS	Silty Clay	
5.80	13.60	7.80	GRAVELS	Gravel	
13.60	13.90	0.30	GREY SHALE	Shale	

Remarks

WaterNSW
Work Summary

GW107565

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status:
Construct.Method: Rotary
Owner Type:

Commenced Date: **Final Depth:** 13.80 m
Completion Date: 22/11/2005 **Drilled Depth:** 13.80 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: William Crump
Assistant Driller:

Property: **Standing Water Level (m):**
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2 787827
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6264687.000 **Latitude:** 33°44'11.2"S
Elevation Source: Unknown **Easting:** 286751.000 **Longitude:** 150°41'53.3"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	1.50	304			Rotary Air
1		Hole	Hole	1.50	5.50	228			Rotary - Air/Foam
1		Hole	Hole	5.50	13.80	187			Other
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded, Q:162.000m3
1	1	Casing	Pvc Class 18	0.00	7.00	60			Other, Screwed
1	1	Casing	Pvc Class 18	0.00	10.80	60			Other, Screwed
1	1	Opening	Screen	7.00	10.00	60		0	PVC Class 18, Screwed, A: 0.50mm
1	1	Opening	Screen	10.80	13.80			0	Screwed, A: 0.50mm

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	BITUMEN	Invalid Code	
0.30	5.50	5.20	SANDY CLAY	Invalid Code	
5.50	13.60	8.10	GRAVELS	Gravel	
13.60	13.80	0.20	SHALE	Shale	

WaterNSW
Work Summary

GW107897

Licence: 10BL164997 **Licence Status:** ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status:
Construct.Method: Rotary
Owner Type:

Commenced Date: **Final Depth:** 10.10 m
Completion Date: 14/02/2005 **Drilled Depth:** 10.10 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: William Crump
Assistant Driller:

Property: PENRITH PROPERTY 2101 CASTELREAGH RD PENRITH 2750 NSW **Standing Water Level (m):** 7.000
GWMA: - **Salinity Description:**
GW Zone: - **Yield (L/s):** 0.010

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	1 787827
Licensed:	CUMBERLAND	CASTLEREAGH	Whole Lot 1//787827

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6264834.000 **Latitude:** 33°44'06.3"S
Elevation Source: Unknown **Easting:** 286625.000 **Longitude:** 150°41'48.5"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	4.30	187			Auger
1		Hole	Hole	4.30	10.10	187			Other
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded, Q:190.000m3
1	1	Casing	Pvc Class 18	-0.10	7.10	60	50		Seated on Bottom, Screwed
1	1	Opening	Screen	7.10	10.10	60		0	PVC Class 18, Screwed, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
7.00	10.10	3.10	Unknown	7.00		0.01	10.10		

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	4.10	4.10	BROWN CLAY	Clay	
4.10	10.10	6.00	GRAVELS	Gravel	

WaterNSW
Work Summary

GW107898

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status:
Construct.Method: Rotary
Owner Type:

Commenced Date: **Final Depth:** 10.10 m
Completion Date: 15/05/2005 **Drilled Depth:** 10.10 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: William Crump
Assistant Driller:

Property: **Standing Water Level (m):** 7.000
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):** 0.010

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	1 787827
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6264883.000 **Latitude:** 33°44'04.6"S
Elevation Source: Unknown **Easting:** 286470.000 **Longitude:** 150°41'42.6"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.30	187			Auger
1		Hole	Hole	5.30	10.10	187			Other
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded, Q:266.000m3
1	1	Casing	Pvc Class 18	-0.10	7.10	60	50		Seated on Bottom, Screwed
1	1	Opening	Screen	7.10	10.10	60		0	PVC Class 18, Screwed, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
7.00	10.10	3.10	Unknown	7.00		0.01	10.10		

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	5.30	5.30	SANDY CLAY,DRY, HARD	Invalid Code	
5.30	10.10	4.80	GRAVELS	Gravel	

WaterNSW
Work Summary

GW107899

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status:
Construct.Method: Rotary
Owner Type:

Commenced Date: **Final Depth:** 10.00 m
Completion Date: 16/02/2005 **Drilled Depth:** 10.00 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: William Crump
Assistant Driller:

Property: **Standing Water Level (m):** 7.000
GWMA: **Salinity Description:**
GW Zone: **Yield (L/s):** 0.010

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	1 787827
Licensed:			

Region: 10 - Sydney South Coast **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6264924.000 **Latitude:** 33°44'03.2"S
Elevation Source: Unknown **Easting:** 286425.000 **Longitude:** 150°41'40.8"E

GS Map: - **MGA Zone:** 56 **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	2.90	187			Auger
1		Hole	Hole	2.90	10.00	187			Other
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded, Q:342.000m3
1	1	Casing	Pvc Class 18	-0.10	6.00	60	50		Seated on Bottom, Screwed
1	1	Opening	Screen	6.00	10.00	60		0	PVC Class 18, Screwed, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
7.00	10.00	3.00	Unknown	7.00		0.01	10.00		

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.90	2.90	SANDY CLAY	Invalid Code	
2.90	4.20	1.30	CLAY BANDS AND GRAVELS	Clay	
4.20	10.00	5.80	GRAVELS	Gravel	

WaterNSW
Work Summary

GW107900

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status:
Construct.Method: Rotary
Owner Type:

Commenced Date: | **Final Depth:** 10.00 m
Completion Date: 17/02/2005 | **Drilled Depth:** 10.00 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: William Crump
Assistant Driller:

Property: | **Standing Water Level (m):** 7.000
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):** 0.010

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	1 787827
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6264924.000 | **Latitude:** 33°44'03.2"S
Elevation Source: Unknown | **Easting:** 286376.000 | **Longitude:** 150°41'38.9"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.90	187			Auger
1		Hole	Hole	5.90	10.00	187			Other
1		Annulus	Waterworn/Rounded	0.00	0.00				Graded, Q:209.000m3
1	1	Casing	Pvc Class 18	0.00	6.00	60	50		Seated on Bottom, Screwed
1	1	Opening	Screen	6.00	10.00	60		0	PVC Class 18, Screwed, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
7.00	10.00	3.00	Unknown	7.00		0.01	10.00		

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	5.90	5.90	BROWN CLAY	Clay	
5.90	10.00	4.10	GRAVELS	Gravel	

WaterNSW
Work Summary

GW108072

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status:
Construct.Method: Rotary
Owner Type:

Commenced Date: | **Final Depth:** 14.20 m
Completion Date: 05/05/2006 | **Drilled Depth:** 14.20 m

Contractor Name: INTERTEC DRILLING SERVICES
Driller: William Crump
Assistant Driller:

Property: | **Standing Water Level (m):** 6.000
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2 787827
Licensed:			

Region: 10 - Sydney South Coast | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) | **Northing:** 6264574.000 | **Latitude:** 33°44'14.8"S
Elevation Source: Unknown | **Easting:** 286660.000 | **Longitude:** 150°41'49.6"E

GS Map: - | **MGA Zone:** 56 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	5.40	228			Rotary Air
1		Hole	Hole	5.40	14.20	187			Rotary Air
1		Annulus	Waterworn/Rounded	4.00	14.20				Graded, Q:180.000m3
1	1	Casing	Pvc Class 18	0.00	9.00	60			Other, Screwed
1	1	Casing	Pvc Class 18	0.00	14.20	60			Seated on Bottom, Screwed
1	1	Opening	Screen	6.00	9.00	60		0	PVC Class 18, Screwed, A: 0.50mm
1	1	Opening	Screen	11.20	14.20	60		0	PVC Class 18, Screwed, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
6.00	13.90	7.90	Unknown	6.00					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.20	0.20	CONCRETE	Invalid Code	
0.20	4.50	4.30	SANDY CLAY	Invalid Code	
4.50	13.90	9.40	GRAVELS	Gravel	
13.90	14.20	0.30	SHALE	Shale	

WaterNSW
Work Summary

GW114760

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Sonic
Owner Type: Private

Commenced Date:
Completion Date: 30/11/2010
Final Depth: 13.80 m
Drilled Depth: 13.80 m

Contractor Name: Boart Longyear
Driller: Unkown Unknown
Assistant Driller:

Property:
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	CUMBERLAND	CASTLEREA	2//787827
Licensed:			

Region: 10 - Sydney South Coast
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6264625.000
Easting: 286675.000
Latitude: 33°44'13.1"S
Longitude: 150°41'50.3"E

GS Map: -
MGA Zone: 56
Coordinate Source: GPS - Global

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	13.80	200			Sonic
1	1	Casing		0.00	0.00	32			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.10	0.10	CONCRETE	Fill	
0.10	1.50	1.40	NON DESTRUCTIVE DRILLING PERFOMED	(Unknown)	
1.50	2.30	0.80	SAND POORLY GRADED WITH GRAVEL	Sand	
2.30	2.90	0.60	SAND WELL GRADED	Sand	
2.90	4.70	1.80	SAND WELL GRADED WITH SILT,GRAVEL AND CLAY	Sand	
4.70	7.70	3.00	SAND POORLY GRADED AND CLAY WITH COBBLE AND GRAVEL	Sand	
7.70	8.90	1.20	SAND WELL GRADED WITH GRAVEL	Sand	
8.90	9.10	0.20	GRANODIORITE COBBLE HARD	Granodiorite	
9.10	13.20	4.10	SAND POORLY GRADED WITH SILT	Sand	
13.20	13.80	0.60	SHALE,WEATHERED, FINE GRAINED,HARD	Shale	

Remarks

29/01/2015: Coordinates provided on logs.
L Franchi
15/04/2015: Nat Carling, 15 Apr 2015; Fixed rock type errors.

Appendix D – Borelogs

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Land & Groundwater Consulting Pty Ltd
13/80-84 Illawarra Road
Marrickville NSW 2204
Tel: (02) 9560 9760
Fax: (02) 9572 6440

BOREHOLE BH1

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH1/0.1-0.3			CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry.	D	
						0.2 m - CLAY, grey-orange, non-plastic, stiff, hard, moist.	M	
		BH1/0.5-1.0	1					

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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Marrickville NSW 2204
Tel: (02) 9560 9760
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BOREHOLE BH2

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH2/0.1-0.3 BH2/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey-orange, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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BOREHOLE BH3

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH3/0.1-0.3			CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry.	D	
						0.2 m - CLAY, grey-orange, non-plastic, stiff, hard, moist.	M	
		BH3/0.5-1.0	1					

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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BOREHOLE BH4

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH4/0.1-0.3 BH4/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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Marrickville NSW 2204
Tel: (02) 9560 9760
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BOREHOLE BH5

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface/Grass		
Push tube	Not Encountered	BH5/0.1-0.3 BH5/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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Marrickville NSW 2204
Tel: (02) 9560 9760
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BOREHOLE BH6

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH6/0.1-0.3 BH6/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey-orange, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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BOREHOLE BH7

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH7/0.1-0.3 BH7/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey-orange, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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BOREHOLE BH8

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH8/0.1-0.3 BH8/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey-orange, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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BOREHOLE BH9

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH9/0.1-0.3			CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry.	D	
						0.2 m - CLAY, grey-orange, non-plastic, stiff, hard, moist.	M	
		BH9/0.5-1.0	1					

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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BOREHOLE BH10

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH10/0.1-0.3 BH10/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey-orange, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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BOREHOLE BH11

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH11/0.1-0.3 BH11/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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Marrickville NSW 2204
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BOREHOLE BH12

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH12/0.1-0.3 BH12/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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Marrickville NSW 2204
Tel: (02) 9560 9760
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BOREHOLE BH13

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH13/0.1-0.3 BH13/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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BOREHOLE BH14

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH14/0.1-0.3 BH14/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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Tel: (02) 9560 9760
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BOREHOLE BH15

Client: Vaughan Constructions
Project Name: Detailed Environmental Site Investigation Report
Location: 22-23 Lambridge Place, Penrith, NSW
Project Number: LG2124.01

Date Started: 11/08/2021
Date Completed: 11/08/2021
Logged By: Gonzalo Parra

Drilling Contractor: -
Equipment: Geoprobe
Hole Size: 120 mm Diamater
Hole Location: Refer to Figure 3

R.L. Surface:
Datum: -
Easting: -
Northing: -

Method	Groundwater	Sample ID	Depth (m)	Graphic Log	Unified Classification	Description	Moisture	Additional Observations
			0			Ground Surface		
Push tube	Not Encountered	BH15/0.1-0.3 BH15/0.5-1.0	1		CL	Fill, GRAVELLY, COARSE SAND, CLAY, light grey, poorly graded, loose, dry. 0.2 m - CLAY, grey, non-plastic, stiff, hard, moist.	D M	

End of hole at 1.0 m

Moisture
D: Dry H: Humid
M: Moist W: Wet

Remarks

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Appendix E – Data Validation

E1 Introduction

The following sections describe the components of the Quality Assurance and Quality Control Plan that assess the achievement of the DQOs by consideration of the data quality indicators – DQIs (precision, accuracy, reproducibility, completeness and comparability).

E2 Data Quality Indicators

The project DQIs have been established to set acceptance limits on field and laboratory data collected as part of these DESI works. For both field and laboratory procedures, acceptance limits are set at different levels for different projects and by the laboratories.

Non-compliances with acceptance limits are to be documented and discussed in the report. The DQIs are as follows:

DQI	Field	Laboratory	Acceptability Limits
Precision	Sampling methodologies appropriate and complied with. Collection of intra-laboratory duplicate samples	Analysis of: Field intra-laboratory duplicate samples (1 in 10 samples) Laboratory duplicate samples	 RPD of < 50% RPD of < 50%
Accuracy	Sampling methodologies appropriate and complied with. Collection of rinsate blanks	Analysis of: Rinsate blanks (1/day/equipment) Method blanks Matrix spikes Matrix spike duplicates Laboratory control samples Surrogate spikes Reference Materials	 Non-detect for CoC Non-detect for CoC 70 to 130% RPD of <50% 70 to 130 % 70 to 130% Varies

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DQI	Field	Laboratory	Acceptability Limits
Representativeness	Appropriate media sampled according to LG methodologies All media identified in the methodology section sampled.	All samples analysed according to LG discretion and based on Section 2.2 of this report.	All samples analysed according to the LG and laboratory methodologies.
Comparability	Same sampling methodologies used on each day of sampling Experienced sampler Climatic conditions Same types of samples collected	Same analytical methods used (including clean-up) Sample laboratory detection limits (justify/quantify if different) Same laboratories (NATA accredited) Same units	As per NEPC (1999c) < nominated criteria where applicable
Completeness	All critical locations and media sampled All samples collected Sampling methodologies appropriate and complied with Experienced sampler Documentation correct	All critical samples analysed and all analytes analysed according to the methodology section. Appropriate methods Appropriate laboratory detection limits Sample documentation complete Sample holding times complied with	As per NEPC (1999c) < nominated criteria where applicable As per NEPC (1999b)

An assessment of field and laboratory QA/QC data and clarification of the degree to which each of these aspects above was met is provided in **Section F5**.

E3 Field QA/QC

E3.2 Sample Collection

E3.2.1 Soil Samples

During the test pitting works, samples were generally collected from the fill materials between 0.1 to 0.3 m bgs and from natural soils between 0.5 to 1.0 m bgs. At least one sample was collected from each borehole location from the fill materials and one sample from the natural soils.

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Drilling through the fill materials and into natural soil materials was completed using a machine drilling rig. Soil samples were collected directly from the gouge auger tube using a hand protected by a nitrile glove and placed immediately into a laboratory prepared 125 mL glass jar.

Field intra-laboratory duplicates of the soil were prepared in the field by collecting separate samples from the auger from the same depth. A duplicate of the soil sample was prepared in the field by splitting the sample. Samples were not mixed or homogenised during collection or splitting. The sample for duplicate analysis was selected from a sampling location showing high probability of containing contaminants of concern, i.e., samples characterised by potentially contaminating activities and odours.

E3.3 Sample Handling and Preservation

During sampling, a new pair of disposable nitrile sampling gloves was donned between each sampling location and depth. Samples were placed immediately into a laboratory prepared and supplied container in accordance with the methodology described in **Section E3.2** above.

Soil samples were placed in a chilled, insulated container with ice between sampling and analysis.

Sample numbers, depths, preservation and analytical requirements were recorded on the chain-of-custody documentation (signed copies provided with the laboratory reports in **Appendix F**), which accompanied the samples to the laboratory.

E3.5 Intra-laboratory Replicate Samples

The purpose of field replicate samples is to estimate the variability of a given characteristic or contaminant associated with a population. Intra-laboratory replicate samples were collected and analysed at a rate of at least one (1) in twenty (20) primary samples.

The actual intra-laboratory replicate and inter-laboratory replicate sample frequency was as follows:

- **Soil:**
  - Two (2) duplicate (intra-laboratory replicate) samples (for 30 primary samples), meeting the 5% sampling rate requirement in AS 4482. All were analysed for 8 metals, TRH, and BTEX, PAH, PCB and OCP/OPP to match the primary sample analytical suite. Duplicate analysis for asbestos was not

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conducted and LG considered it acceptable due to discrete nature of ACM impacts.

E3.6.1 Soil Sampling

Single-use polyethylene push tubes were used when each borehole was advanced and a clean pair of disposable gloves was worn to collect each sample.

During soil sampling works, the augers were sprayed with an aqueous solution of Decon 90 followed by a rinse in potable water. Given that samples were collected directly from the dedicated push tube using single-use gloves and no-reuseable sampling equipment came into contact with the soil sampled minimal rinsate blanks were considered necessary during the soil investigation works.

E4 Laboratory QA/QC

E4.1 Analytical Laboratory

Samples were submitted to the SGS, Alexandria, NSW (primary laboratory).

SGS is a NATA-accredited laboratory and their analytical procedures are based on established internationally-recognised procedures such as those published by the US EPA, APHA, AS and NEPM (2013).

SGS analytical procedures are based on methods referenced from published sources including the US EPA APHA, AS and NEPM (2013).

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E4.2 Analytical Methods

The laboratory analysis methods are provided on the laboratory certificates in **Appendix F** and summarised below:

Soil Analytical Method:

Analysis	SGS Laboratory	
	Standard Estimated Quantitation Limit	**Reference Method**
TRHs	25-100 mg/kg	Extraction with DCM/Acetone or MeOH then PT-GC/FID or GC/MS (USEPA 3510, 8015)
BTEX	0.2-2 mg/kg	Methanolic extraction then PT-GC/MS (USEPA 5030, 8260)
PAHs OCPs OPPs PCBs	0.05-0.2 mg/kg	Extraction with DCM/Acetone then GC/MS (USEPA 3510, 8270)
Metals	0.5-4 mg/kg	ICP/AES (USEPA 6020)
Asbestos	0.2-2 mg/kg	ASB-001 - Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004

Note:
DCM= Dichloromethane
GC= Gas Chromatography
MS = Mass Spectrometry
ICP = Inductively Coupled Plasma
FI =Flame Injection

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E4.3 Laboratory (Method) Blanks

Laboratory or control blanks consist of reagents specific to each individual analytical method and are prepared and analysed by laboratories in the same manner as regular samples. The preparation and analysis of laboratory blanks enables the measurement of contamination within the laboratory.

Laboratory blanks are typically analysed at a frequency of 1 in 10, with a minimum of one analysed per batch.

Review of laboratory QA/QC reports indicated that the results for all method blanks for soil were below the laboratory EQLs.

E4.4 Laboratory Duplicates

Laboratory duplicate samples are prepared in the laboratory by splitting a field sample and analysing it as two independent samples. The analysis of laboratory duplicate samples provides an indication of analytical precision and may be influenced by sample heterogeneity. The laboratory duplicate RPDs are used to assess laboratory precision.

Laboratory duplicates are typically analysed at a frequency of 1 in 10, with a minimum of one analysed per batch.

Review of the laboratory QA/QC reports indicated the following:

- RPD exceedances for Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Benzo(ghi)perylene, Carcinogenic PAHs BaP TEQ <LOR=0, Carcinogenic PAHs BaP TEQ <LOR=LOR, Carcinogenic PAHs BaP TEQ <LOR=LOR/2 and Total PAH (18) in primary soil sample BH15/0.5-1.0 of SGS report SE222517.030. These were attributed by the laboratory to sample heterogeneity.

- RPD exceedance for Chromium in primary soil sample BH10/0.1-0.3 of SGS report SE222517.019. This was attributed by the laboratory to sample heterogeneity.

- RPD exceedances for Chromium and Nickel in intra laboratory soil sample QC2 of SGS report SE222517.032. These were attributed by the laboratory to sample heterogeneity.

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E4.5 Laboratory Control Samples

Laboratory control samples (LCS) or Quality Control check samples are prepared within the laboratory by spiking an aliquot of an appropriate clean matrix reagent with known concentrations of specific analytes. The LCS sample is then analysed and the results are used to assess the laboratory performance on sample preparation and analysis procedure. Certified reference material may also be used to assess analytical accuracy independent of the investigations. Accuracy is assessed by calculation of percent recovery.

LCSs are typically analysed at a frequency of 1 in 20, with a minimum of one analysed per analytical batch.

Reviews of the laboratory QA/QC reports indicated that the percent recoveries for laboratory control samples ranged from 65% to 130% which are within the acceptance criteria.

E4.6 Matrix Spikes

Matrix spikes are samples prepared within the laboratory by dividing a field sample into two aliquots, then spiking each with identical concentrations of the analytes. The matrix spike and matrix spike duplicate are then analysed separately and the results compared to determine the effects of the sample matrix on the accuracy and precision of the analytes.

Accuracy is assessed by the calculation of the percent recovery.

Review of the laboratory QA/QC reports indicated that the percent recoveries for matrix spikes ranged from 64% to 135% which are within the acceptance criteria.

E4.7 Surrogates

Surrogates are compounds which are similar to the organic analytes of interest in chemical composition, extraction, and chromatographic behaviour, but which are not normally found in field samples.

Surrogates are generally spiked into all sample aliquots prior to preparation and analysis by chromatogaphic methods.

Review of the laboratory QA/QC reports indicated that the percent recoveries for surrogates for soil ranged from 76% to 120% which are within the acceptance criteria for organic compounds for the laboratory.

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E4.8 Holding Times

NEPC (1999), APHA 20th Edition and AS2031.1-1986 present recommended holding times for various analyses (under specified conditions, for example below 4°C in an airtight container), which must be met in order to consider the results valid. The holding times may vary slightly depending on the document referenced.

The standard holding times for the analysis undertaken for this investigation is set out in the table below.

Analyte	Matrix	Recommended Maximum Holding Time	Compliance
TRH	Soil	14 days	Y
BTEX	Soil	14 days	Y
PAHs	Soil	14 days	Y
Metals	Soil	6 months	Y
Mercury	Soil	28 days	Y

Review of the chain-of-custody documentation and the laboratory reports indicated that for the initial batches of analysis for soil, the holding times met the standard holding times set out in the table above for all analytes tested.

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E5 Data Validation

The overall assessment of the quality of the data obtained during this investigation is discussed below in terms of the data quality indicators provided above.

Non-compliances have been documented and discussed in the report. The DQIs are as follows:

DQI	Description	Compliance
Precision	Precision is a quantitative measure of the variability (or reproducibility) of data.	Precision or variability of the data was assessed by determining RPDs between the original and duplicate samples analysed. Based on results discussed above, LG considers that the precision of the data is sufficient for the purposes of this investigation.
Accuracy	Accuracy is a quantitative measure of the closeness of reported data to the true value.	Accuracy of the data was mainly assessed through review of the laboratory QA/QC results. From the laboratory QA/QC results, LG considers that the accuracy of the data is sufficient for the purposes of this investigation.
Representativeness	Representativeness is the confidence (expressed qualitatively) that data are representative of each media present on the site.	Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of parameter variations at sampling points or environmental conditions. Sample representativeness is controlled through selecting sampling locations that exemplify site conditions and obtaining suitable samples from these sites. Sample selection and analysis was conducted in order to meet the specific objectives of the project. Analysis for the contaminants of concern was selectively conducted on samples collected as indicated in analytical tables. Based on the sampling and analytical regime undertaken by LG, the results obtained are considered to be sufficiently representative of the subsurface conditions at the locations tested.

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DQI	Description	Compliance
Completeness	Completeness is a measure of the amount of usable data (expressed as %) from a data collection activity.	The completeness of data is defined as the percentage of analytical results that are considered valid. Valid chemical data are values that have been identified as acceptable or acceptable as qualified during the data validation process. The completeness is a comparison of the total number of samples accepted against the total number of samples, calculated as a percentage. The project goal for completeness is 95%. Completeness also includes checking that all entries in the data tables are correct, properly entered, and that any typographical errors are corrected and the data are re-entered properly, as required. Some of the samples collected and analysed did not comply with the stated DQIs. However, the data that did comply with the DQOs and DQIs, is considered to be sufficiently quantitative and complete for the purposes of this investigation (i.e. >95%)
Comparability	Comparability is the confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.	Comparability expresses the confidence with which one data set can be compared with another. In order to assess comparability, field sampling procedures, laboratory sample preparation procedures, analytical procedures, and reporting units must be known and similar to established protocols, as was the case during this investigation. Qualitatively, data subjected to strict QA/QC procedures will be deemed more reliable, and therefore more comparable, than other data. Each analyte was analysed by the same analytical laboratory using identical methods, and laboratory EQLs were consistent over each laboratory batch. Additionally, a check laboratory was used to assess variability between laboratories. Based on the above, the data obtained throughout the investigation is considered to be suitably comparable.

LG notes that the deviations from standard data quality requirements are a result of the nature of the sampled materials and do not reflect adversely on the sampling methods adopted. Interpretation of the results should acknowledge potentially increased variability in the data and values close to guideline criteria should be treated with caution. No such results were identified in this assessment and LG considers that the laboratory data quality is acceptable for the identification and delineation of impact at the site.

Based on the assessment of field and laboratory QA/QC data, LG considers that the reported field and analytical results are of a quality that can be relied upon for the purposes of the investigation works.

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Appendix F – Laboratory Reports

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Gonzalo Parra
Client	LAND AND GROUNDWATER CONSULTING PTY LTD
Address	131 B Riverview Road NSW 2204
Telephone	61 2 95598424
Facsimile	(Not specified)
Email	gparra@lgconsult.com.au
Project	**LG2124.02 22-23 Lambridge Pl Penrith NSW**
Order Number	**LG2124.02**
Samples	32

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE222517 R0**
Date Received	11/8/2021
Date Reported	18/8/2021

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.

A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

[redacted]

Akheeqar BENIAMEEN
Chemist

Bennet LO
Senior Chemist

Dong LIANG
Metals/Inorganics Team Leader

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Production Manager

Ly Kim HA
Organic Section Head

Shane MCDERMOTT
Inorganic/Metals Chemist

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VOC's in Soil [AN433] Tested: 12/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH1/0.5-1.0 SOIL - 11/8/2021 SE222517.002	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH2/0.5-1.0 SOIL - 11/8/2021 SE222517.004	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH3/0.5-1.0 SOIL - 11/8/2021 SE222517.006	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH4/0.5-1.0 SOIL - 11/8/2021 SE222517.008	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH5/0.5-1.0 SOIL - 11/8/2021 SE222517.010
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH6/0.5-1.0 SOIL - 11/8/2021 SE222517.012	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013	BH7/0.5-1.0 SOIL - 11/8/2021 SE222517.014	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH8/0.5-1.0 SOIL - 11/8/2021 SE222517.016	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH9/0.5-1.0 SOIL - 11/8/2021 SE222517.018	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019	BH10/0.5-1.0 SOIL - 11/8/2021 SE222517.020
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

VOC's in Soil [AN433] Tested: 12/8/2021 (continued)

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH11/0.5-1.0 SOIL - 11/8/2021 SE222517.022	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH12/0.5-1.0 SOIL - 11/8/2021 SE222517.024	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	BH13/0.5-1.0 SOIL - 11/8/2021 SE222517.026	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH14/0.5-1.0 SOIL - 11/8/2021 SE222517.028	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	BH15/0.5-1.0 SOIL - 11/8/2021 SE222517.030
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	QC1 SOIL - 11/8/2021 SE222517.031	QC2 SOIL - 11/8/2021 SE222517.032
Benzene	mg/kg	0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 12/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH1/0.5-1.0 SOIL - 11/8/2021 SE222517.002	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH2/0.5-1.0 SOIL - 11/8/2021 SE222517.004	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH3/0.5-1.0 SOIL - 11/8/2021 SE222517.006	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH4/0.5-1.0 SOIL - 11/8/2021 SE222517.008	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH5/0.5-1.0 SOIL - 11/8/2021 SE222517.010
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH6/0.5-1.0 SOIL - 11/8/2021 SE222517.012	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013	BH7/0.5-1.0 SOIL - 11/8/2021 SE222517.014	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH8/0.5-1.0 SOIL - 11/8/2021 SE222517.016	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH9/0.5-1.0 SOIL - 11/8/2021 SE222517.018	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019	BH10/0.5-1.0 SOIL - 11/8/2021 SE222517.020
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH11/0.5-1.0 SOIL - 11/8/2021 SE222517.022	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH12/0.5-1.0 SOIL - 11/8/2021 SE222517.024	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH13/0.5-1.0 SOIL - 11/8/2021 SE222517.026	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH14/0.5-1.0 SOIL - 11/8/2021 SE222517.028	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	BH15/0.5-1.0 SOIL - 11/8/2021 SE222517.030
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 12/8/2021 (continued)

PARAMETER	UOM	LOR	QC1 SOIL - 11/8/2021 SE222517.031	QC2 SOIL - 11/8/2021 SE222517.032
TRH C6-C9	mg/kg	20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 12/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH1/0.5-1.0 SOIL - 11/8/2021 SE222517.002	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH2/0.5-1.0 SOIL - 11/8/2021 SE222517.004	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH3/0.5-1.0 SOIL - 11/8/2021 SE222517.006	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH4/0.5-1.0 SOIL - 11/8/2021 SE222517.008	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH5/0.5-1.0 SOIL - 11/8/2021 SE222517.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH6/0.5-1.0 SOIL - 11/8/2021 SE222517.012	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013	BH7/0.5-1.0 SOIL - 11/8/2021 SE222517.014	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 12/8/2021 (continued)

PARAMETER	UOM	LOR	BH8/0.5-1.0 SOIL - 11/8/2021 SE222517.016	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH9/0.5-1.0 SOIL - 11/8/2021 SE222517.018	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019	BH10/0.5-1.0 SOIL - 11/8/2021 SE222517.020
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH11/0.5-1.0 SOIL - 11/8/2021 SE222517.022	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH12/0.5-1.0 SOIL - 11/8/2021 SE222517.024	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH13/0.5-1.0 SOIL - 11/8/2021 SE222517.026	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH14/0.5-1.0 SOIL - 11/8/2021 SE222517.028	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	BH15/0.5-1.0 SOIL - 11/8/2021 SE222517.030
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 12/8/2021 (continued)

PARAMETER	UOM	LOR	QC1 SOIL - 11/8/2021 SE222517.031	QC2 SOIL - 11/8/2021 SE222517.032
TRH C10-C14	mg/kg	20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 12/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005	BH3/0.5-1.0 SOIL - 11/8/2021 SE222517.006	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.3**
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.1**
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.8**
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.7**
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.3**
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.2**
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	**0.3**
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	**0.4**
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	**0.4**
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	**3.3**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	**3.3**

PARAMETER	UOM	LOR	BH4/0.5-1.0 SOIL - 11/8/2021 SE222517.008	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH5/0.5-1.0 SOIL - 11/8/2021 SE222517.010	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	**0.3**	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	**0.1**	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.8**	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	**0.7**	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	**0.3**	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.3**	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	**0.3**	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	**0.2**	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	**0.3**	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	**0.4**	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	**0.4**	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	**3.4**	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**3.4**	<0.8	<0.8	<0.8	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 12/8/2021 (continued)

PARAMETER	UOM	LOR	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH9/0.5-1.0 SOIL - 11/8/2021 SE222517.018	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019	BH10/0.5-1.0 SOIL - 11/8/2021 SE222517.020
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH11/0.5-1.0 SOIL - 11/8/2021 SE222517.022	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 12/8/2021 (continued)

PARAMETER	UOM	LOR	BH14/0.5-1.0 SOIL - 11/8/2021 SE222517.028	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	BH15/0.5-1.0 SOIL - 11/8/2021 SE222517.030	QC1 SOIL - 11/8/2021 SE222517.031	QC2 SOIL - 11/8/2021 SE222517.032
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.7**
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.3**
Fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.2**	<0.1	**2.1**
Pyrene	mg/kg	0.1	<0.1	<0.1	**0.2**	<0.1	**1.9**
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.7**
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.7**
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.8**
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.5**
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.8**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.5**
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.6**
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	**1.0**
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	**1.1**
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	**1.1**
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	**9.7**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	**9.7**

OC Pesticides in Soil [AN420] Tested: 12/8/2021

PARAMETER	UOM	LOR	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 12/8/2021 (continued)

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	QC2 SOIL - 11/8/2021 SE222517.032
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1

OP Pesticides in Soil [AN420] Tested: 12/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH1/0.5-1.0 SOIL - 11/8/2021 SE222517.002	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH2/0.5-1.0 SOIL - 11/8/2021 SE222517.004	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005
Dichlorvos	mg/kg	0.5	-	-	-	-	<0.5
Dimethoate	mg/kg	0.5	-	-	-	-	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	-	-	-	-	<0.5
Fenitrothion	mg/kg	0.2	-	-	-	-	<0.2
Malathion	mg/kg	0.2	-	-	-	-	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	-	-	-	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	-	-	-	-	<0.2
Bromophos Ethyl	mg/kg	0.2	-	-	-	-	<0.2
Methidathion	mg/kg	0.5	-	-	-	-	<0.5
Ethion	mg/kg	0.2	-	-	-	-	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	-	-	-	-	<0.2
Total OP Pesticides*	mg/kg	1.7	-	-	-	-	<1.7

PARAMETER	UOM	LOR	BH3/0.5-1.0 SOIL - 11/8/2021 SE222517.006	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH4/0.5-1.0 SOIL - 11/8/2021 SE222517.008	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH5/0.5-1.0 SOIL - 11/8/2021 SE222517.010
Dichlorvos	mg/kg	0.5	-	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	-	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	-	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	-	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	-	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	-	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	-	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	-	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	<0.2	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7	-	<1.7	-	<1.7	-

PARAMETER	UOM	LOR	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH6/0.5-1.0 SOIL - 11/8/2021 SE222517.012	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013	BH7/0.5-1.0 SOIL - 11/8/2021 SE222517.014	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015
Dichlorvos	mg/kg	0.5	-	-	-	-	-
Dimethoate	mg/kg	0.5	-	-	-	-	-
Diazinon (Dimpylate)	mg/kg	0.5	-	-	-	-	-
Fenitrothion	mg/kg	0.2	-	-	-	-	-
Malathion	mg/kg	0.2	-	-	-	-	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	-	-	-	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	-	-	-	-
Bromophos Ethyl	mg/kg	0.2	-	-	-	-	-
Methidathion	mg/kg	0.5	-	-	-	-	-
Ethion	mg/kg	0.2	-	-	-	-	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	-	-	-	-
Total OP Pesticides*	mg/kg	1.7	-	-	-	-	-

OP Pesticides in Soil [AN420] Tested: 12/8/2021 (continued)

PARAMETER	UOM	LOR	BH8/0.5-1.0 SOIL - 11/8/2021 SE222517.016	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH9/0.5-1.0 SOIL - 11/8/2021 SE222517.018	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019	BH10/0.5-1.0 SOIL - 11/8/2021 SE222517.020
Dichlorvos	mg/kg	0.5	-	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	-	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	-	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	-	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	-	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	-	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	-	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	-	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	<0.2	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7	-	<1.7	-	<1.7	-

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH11/0.5-1.0 SOIL - 11/8/2021 SE222517.022	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH12/0.5-1.0 SOIL - 11/8/2021 SE222517.024	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025
Dichlorvos	mg/kg	0.5	<0.5	-	-	-	-
Dimethoate	mg/kg	0.5	<0.5	-	-	-	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	-	-	-
Fenitrothion	mg/kg	0.2	<0.2	-	-	-	-
Malathion	mg/kg	0.2	<0.2	-	-	-	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	-	-	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	-	-	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	-	-	-
Methidathion	mg/kg	0.5	<0.5	-	-	-	-
Ethion	mg/kg	0.2	<0.2	-	-	-	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	-	-	-
Total OP Pesticides*	mg/kg	1.7	<1.7	-	-	-	-

PARAMETER	UOM	LOR	BH13/0.5-1.0 SOIL - 11/8/2021 SE222517.026	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH14/0.5-1.0 SOIL - 11/8/2021 SE222517.028	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	BH15/0.5-1.0 SOIL - 11/8/2021 SE222517.030
Dichlorvos	mg/kg	0.5	-	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	-	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	-	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	-	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	-	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	-	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	-	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	-	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	<0.2	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7	-	<1.7	-	<1.7	-

OP Pesticides in Soil [AN420] Tested: 12/8/2021 (continued)

PARAMETER	UOM	LOR	QC1 SOIL - 11/8/2021 SE222517.031	QC2 SOIL - 11/8/2021 SE222517.032
Dichlorvos	mg/kg	0.5	-	<0.5
Dimethoate	mg/kg	0.5	-	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	-	<0.5
Fenitrothion	mg/kg	0.2	-	<0.2
Malathion	mg/kg	0.2	-	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	-	<0.2
Bromophos Ethyl	mg/kg	0.2	-	<0.2
Methidathion	mg/kg	0.5	-	<0.5
Ethion	mg/kg	0.2	-	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	-	<0.2
Total OP Pesticides*	mg/kg	1.7	-	<1.7

PCBs in Soil [AN420] Tested: 12/8/2021

PARAMETER	UOM	LOR	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	QC2 SOIL - 11/8/2021 SE222517.032
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1

Conductivity and TDS by Calculation - Soil [AN106] Tested: 18/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH1/0.5-1.0 SOIL - 11/8/2021 SE222517.002	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH2/0.5-1.0 SOIL - 11/8/2021 SE222517.004	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005
Conductivity of Extract (1:5 as received)	µS/cm	1	33	54	26	23	24
Salinity (by calculation)*	mg/kg	5	110	190	86	78	88

PARAMETER	UOM	LOR	BH3/0.5-1.0 SOIL - 11/8/2021 SE222517.006	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH4/0.5-1.0 SOIL - 11/8/2021 SE222517.008	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH5/0.5-1.0 SOIL - 11/8/2021 SE222517.010
Conductivity of Extract (1:5 as received)	µS/cm	1	27	110	77	92	160
Salinity (by calculation)*	mg/kg	5	98	410	310	320	590

PARAMETER	UOM	LOR	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH6/0.5-1.0 SOIL - 11/8/2021 SE222517.012	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013	BH7/0.5-1.0 SOIL - 11/8/2021 SE222517.014	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015
Conductivity of Extract (1:5 as received)	µS/cm	1	50	51	29	18	59
Salinity (by calculation)*	mg/kg	5	180	180	100	62	230

PARAMETER	UOM	LOR	BH8/0.5-1.0 SOIL - 11/8/2021 SE222517.016	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH9/0.5-1.0 SOIL - 11/8/2021 SE222517.018	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019	BH10/0.5-1.0 SOIL - 11/8/2021 SE222517.020
Conductivity of Extract (1:5 as received)	µS/cm	1	65	150	170	140	120
Salinity (by calculation)*	mg/kg	5	240	590	670	550	450

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH11/0.5-1.0 SOIL - 11/8/2021 SE222517.022	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH12/0.5-1.0 SOIL - 11/8/2021 SE222517.024	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025
Conductivity of Extract (1:5 as received)	µS/cm	1	21	29	41	42	180
Salinity (by calculation)*	mg/kg	5	76	110	140	140	660

PARAMETER	UOM	LOR	BH13/0.5-1.0 SOIL - 11/8/2021 SE222517.026	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	BH15/0.5-1.0 SOIL - 11/8/2021 SE222517.030	QC1 SOIL - 11/8/2021 SE222517.031
Conductivity of Extract (1:5 as received)	µS/cm	1	200	220	380	380	76
Salinity (by calculation)*	mg/kg	5	760	840	1400	1400	270

PARAMETER	UOM	LOR	QC2 SOIL - 11/8/2021 SE222517.032
Conductivity of Extract (1:5 as received)	µS/cm	1	100
Salinity (by calculation)*	mg/kg	5	390

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 17/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH1/0.5-1.0 SOIL - 11/8/2021 SE222517.002	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH2/0.5-1.0 SOIL - 11/8/2021 SE222517.004	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005
Arsenic, As	mg/kg	1	2	2	1	2	3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	7.1	7.6	5.9	6.6	8.5
Copper, Cu	mg/kg	0.5	2.9	3.1	2.4	2.7	7.6
Lead, Pb	mg/kg	1	6	5	4	4	8
Nickel, Ni	mg/kg	0.5	2.8	2.9	2.7	2.9	6.7
Zinc, Zn	mg/kg	2	9.3	10	9.3	10	18

PARAMETER	UOM	LOR	BH3/0.5-1.0 SOIL - 11/8/2021 SE222517.006	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH4/0.5-1.0 SOIL - 11/8/2021 SE222517.008	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH5/0.5-1.0 SOIL - 11/8/2021 SE222517.010
Arsenic, As	mg/kg	1	2	5	4	1	3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	9.0	18	13	9.2	18
Copper, Cu	mg/kg	0.5	9.7	15	13	7.6	9.9
Lead, Pb	mg/kg	1	7	16	14	6	9
Nickel, Ni	mg/kg	0.5	20	15	9.5	8.6	17
Zinc, Zn	mg/kg	2	19	36	28	17	29

PARAMETER	UOM	LOR	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH6/0.5-1.0 SOIL - 11/8/2021 SE222517.012	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013	BH7/0.5-1.0 SOIL - 11/8/2021 SE222517.014	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015
Arsenic, As	mg/kg	1	2	2	2	2	4
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	8.2	11	7.6	7.2	13
Copper, Cu	mg/kg	0.5	4.8	11	3.4	3.1	15
Lead, Pb	mg/kg	1	6	7	6	5	14
Nickel, Ni	mg/kg	0.5	5.3	13	3.7	3.3	12
Zinc, Zn	mg/kg	2	13	28	12	11	38

PARAMETER	UOM	LOR	BH8/0.5-1.0 SOIL - 11/8/2021 SE222517.016	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH9/0.5-1.0 SOIL - 11/8/2021 SE222517.018	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019	BH10/0.5-1.0 SOIL - 11/8/2021 SE222517.020
Arsenic, As	mg/kg	1	4	4	6	2	3
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	11	15	15	38	31
Copper, Cu	mg/kg	0.5	11	21	19	64	46
Lead, Pb	mg/kg	1	9	15	19	8	10
Nickel, Ni	mg/kg	0.5	7.2	35	28	110	81
Zinc, Zn	mg/kg	2	23	55	41	65	56

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 17/8/2021

(continued)

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH11/0.5-1.0 SOIL - 11/8/2021 SE222517.022	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH12/0.5-1.0 SOIL - 11/8/2021 SE222517.024	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025
Arsenic, As	mg/kg	1	2	2	2	2	1
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	7.2	7.3	8.2	7.9	15
Copper, Cu	mg/kg	0.5	2.9	3.6	5.6	5.5	61
Lead, Pb	mg/kg	1	5	6	7	7	3
Nickel, Ni	mg/kg	0.5	3.0	3.4	4.6	4.7	130
Zinc, Zn	mg/kg	2	9.8	11	13	13	50

PARAMETER	UOM	LOR	BH13/0.5-1.0 SOIL - 11/8/2021 SE222517.026	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH14/0.5-1.0 SOIL - 11/8/2021 SE222517.028	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	BH15/0.5-1.0 SOIL - 11/8/2021 SE222517.030
Arsenic, As	mg/kg	1	2	5	5	2	5
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	15	24	20	27	21
Copper, Cu	mg/kg	0.5	40	22	18	56	18
Lead, Pb	mg/kg	1	13	16	17	5	17
Nickel, Ni	mg/kg	0.5	54	35	23	140	23
Zinc, Zn	mg/kg	2	64	43	38	57	39

PARAMETER	UOM	LOR	QC1 SOIL - 11/8/2021 SE222517.031	QC2 SOIL - 11/8/2021 SE222517.032
Arsenic, As	mg/kg	1	2	4
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	24	36
Copper, Cu	mg/kg	0.5	31	17
Lead, Pb	mg/kg	1	12	13
Nickel, Ni	mg/kg	0.5	27	40
Zinc, Zn	mg/kg	2	48	40

Mercury in Soil [AN312] Tested: 17/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH1/0.5-1.0 SOIL - 11/8/2021 SE222517.002	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH2/0.5-1.0 SOIL - 11/8/2021 SE222517.004	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH3/0.5-1.0 SOIL - 11/8/2021 SE222517.006	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH4/0.5-1.0 SOIL - 11/8/2021 SE222517.008	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH5/0.5-1.0 SOIL - 11/8/2021 SE222517.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH6/0.5-1.0 SOIL - 11/8/2021 SE222517.012	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013	BH7/0.5-1.0 SOIL - 11/8/2021 SE222517.014	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH8/0.5-1.0 SOIL - 11/8/2021 SE222517.016	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH9/0.5-1.0 SOIL - 11/8/2021 SE222517.018	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019	BH10/0.5-1.0 SOIL - 11/8/2021 SE222517.020
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH11/0.5-1.0 SOIL - 11/8/2021 SE222517.022	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH12/0.5-1.0 SOIL - 11/8/2021 SE222517.024	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH13/0.5-1.0 SOIL - 11/8/2021 SE222517.026	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH14/0.5-1.0 SOIL - 11/8/2021 SE222517.028	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	BH15/0.5-1.0 SOIL - 11/8/2021 SE222517.030
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	QC1 SOIL - 11/8/2021 SE222517.031	QC2 SOIL - 11/8/2021 SE222517.032
Mercury	mg/kg	0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 17/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH1/0.5-1.0 SOIL - 11/8/2021 SE222517.002	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH2/0.5-1.0 SOIL - 11/8/2021 SE222517.004	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005
% Moisture	%w/w	1	7.5	9.3	3.8	3.7	11.6

PARAMETER	UOM	LOR	BH3/0.5-1.0 SOIL - 11/8/2021 SE222517.006	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH4/0.5-1.0 SOIL - 11/8/2021 SE222517.008	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009	BH5/0.5-1.0 SOIL - 11/8/2021 SE222517.010
% Moisture	%w/w	1	9.7	13.2	19.8	8.1	11.2

PARAMETER	UOM	LOR	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH6/0.5-1.0 SOIL - 11/8/2021 SE222517.012	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013	BH7/0.5-1.0 SOIL - 11/8/2021 SE222517.014	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015
% Moisture	%w/w	1	8.1	9.4	5.8	5.4	15.7

PARAMETER	UOM	LOR	BH8/0.5-1.0 SOIL - 11/8/2021 SE222517.016	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH9/0.5-1.0 SOIL - 11/8/2021 SE222517.018	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019	BH10/0.5-1.0 SOIL - 11/8/2021 SE222517.020
% Moisture	%w/w	1	11.7	17.2	17.5	14.5	14.7

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH11/0.5-1.0 SOIL - 11/8/2021 SE222517.022	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH12/0.5-1.0 SOIL - 11/8/2021 SE222517.024	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025
% Moisture	%w/w	1	9.8	12.1	5.7	5.7	12.9

PARAMETER	UOM	LOR	BH13/0.5-1.0 SOIL - 11/8/2021 SE222517.026	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH14/0.5-1.0 SOIL - 11/8/2021 SE222517.028	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029	BH15/0.5-1.0 SOIL - 11/8/2021 SE222517.030
% Moisture	%w/w	1	14.6	13.3	15.0	12.8	13.9

PARAMETER	UOM	LOR	QC1 SOIL - 11/8/2021 SE222517.031	QC2 SOIL - 11/8/2021 SE222517.032
% Moisture	%w/w	1	9.7	14.5

Fibre Identification in soil [AN602] Tested: 17/8/2021

PARAMETER	UOM	LOR	BH1/0.1-0.3 SOIL - 11/8/2021 SE222517.001	BH2/0.1-0.3 SOIL - 11/8/2021 SE222517.003	BH3/0.1-0.3 SOIL - 11/8/2021 SE222517.005	BH4/0.1-0.3 SOIL - 11/8/2021 SE222517.007	BH5/0.1-0.3 SOIL - 11/8/2021 SE222517.009
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH6/0.1-0.3 SOIL - 11/8/2021 SE222517.011	BH7/0.1-0.3 SOIL - 11/8/2021 SE222517.013	BH8/0.1-0.3 SOIL - 11/8/2021 SE222517.015	BH9/0.1-0.3 SOIL - 11/8/2021 SE222517.017	BH10/0.1-0.3 SOIL - 11/8/2021 SE222517.019
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH11/0.1-0.3 SOIL - 11/8/2021 SE222517.021	BH12/0.1-0.3 SOIL - 11/8/2021 SE222517.023	BH13/0.1-0.3 SOIL - 11/8/2021 SE222517.025	BH14/0.1-0.3 SOIL - 11/8/2021 SE222517.027	BH15/0.1-0.3 SOIL - 11/8/2021 SE222517.029
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos/cm or µS/cm @ 25°C. For soils, an extract of as received sample with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Salinity can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. Reference APHA 2510 B.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

AN602	The sample can be reported “no asbestos found at the reporting limit (RL) of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		
***	Indicates that both * and ** apply.				

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Gonzalo Parra
Client	LAND AND GROUNDWATER CONSULTING PTY LTD
Address	131 B Riverview Road NSW 2204
Telephone	61 2 95598424
Facsimile	(Not specified)
Email	gparra@lgconsult.com.au
Project	**LG2124.02 22-23 Lambridge Pl Penrith NSW**
Order Number	**LG2124.02**
Samples	15

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE222517 R0**
Date Received	11 Aug 2021
Date Reported	18 Aug 2021

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.

A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Environmental Services recommends supplying approximately 50-100g of sample in a separate container.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

[redacted]

Akheeqar BENIAMEEN
Chemist

Bennet LO
Senior Chemist

Huong CRAWFORD
Production Manager

[redacted]

Ly Kim HA
Organic Section Head

Yusuf KUTHPUDIN
Asbestos Analyst

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE222517.001	BH1/0.1-0.3	Soil	165g Clay,sand,Soil, Rocks	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.003	BH2/0.1-0.3	Soil	161g Clay,sand,Rocks	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.005	BH3/0.1-0.3	Soil	174g Clay,sand,Soil, Rocks	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.007	BH4/0.1-0.3	Soil	141g Clay,sand,Soil, Rocks,Bitumen	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.009	BH5/0.1-0.3	Soil	122g Clay,sand,Rocks	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.011	BH6/0.1-0.3	Soil	154g Clay,sand,Rocks	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.013	BH7/0.1-0.3	Soil	135g Clay,sand,Soil, Rocks	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.015	BH8/0.1-0.3	Soil	156g Clay,sand,Soil, Rocks,Bitumen	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE222517.017	BH9/0.1-0.3	Soil	162g Clay,sand,Soil, Rocks,Bitumen	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.019	BH10/0.1-0.3	Soil	155g Clay,sand,Soil, Rocks,Bitumen	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE222517.021	BH11/0.1-0.3	Soil	167g Clay,sand,Rocks	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.023	BH12/0.1-0.3	Soil	177g Clay,sand,Soil, Rocks	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.025	BH13/0.1-0.3	Soil	157g Clay,sand,Rocks	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.027	BH14/0.1-0.3	Soil	181g Clay,sand,Rocks,Bitumen	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01
SE222517.029	BH15/0.1-0.3	Soil	153g Clay,sand,Soil, Rocks,Bitumen	11 Aug 2021	No Asbestos Found at RL of 0.1g/kg	<0.01

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit (RL) of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable ’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.
			***	-	Indicates that both * and ** apply.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

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Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

SAMPLE RECEIPT ADVICE

SE222517

CLIENT DETAILS

Contact	Gonzalo Parra
Client	LAND AND GROUNDWATER CONSULTING PTY LTD
Address	131 B Riverview Road NSW 2204
Telephone	61 2 95598424
Facsimile	(Not specified)
Email	gparra@lgconsult.com.au
Project	**LG2124.02 22-23 Lambridge Pl Penrith NSW**
Order Number	**LG2124.02**
Samples	32

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 11/8/2021
Report Due	Wed 18/8/2021
SGS Reference	**SE222517**

SUBMISSION DETAILS

This is to confirm that 32 samples were received on Wednesday 11/8/2021. Results are expected to be ready by COB Wednesday 18/8/2021. Please quote SGS reference SE222517 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	None
Samples received in correct containers	Yes	Sample counts by matrix	32 Soil
Date documentation received	11/8/2021	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	22°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

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Version: 1, Version Date: 10/09/2021

SAMPLE RECEIPT ADVICE

SE222517

CLIENT DETAILS

Client LAND AND GROUNDWATER CONSULTING PTY LTD

Project LG2124.02 22-23 Lambridge Pl Penrith NSW

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity and TDS by Calculation - Soil	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH1/0.1-0.3	2	-	-	26	-	10	11	7
002	BH1/0.5-1.0	2	-	-	-	-	10	11	7
003	BH2/0.1-0.3	2	-	-	26	-	10	11	7
004	BH2/0.5-1.0	2	-	-	-	-	10	11	7
005	BH3/0.1-0.3	2	29	14	26	11	10	11	7
006	BH3/0.5-1.0	2	-	-	26	-	10	11	7
007	BH4/0.1-0.3	2	29	14	26	11	10	11	7
008	BH4/0.5-1.0	2	-	-	26	-	10	11	7
009	BH5/0.1-0.3	2	29	14	26	11	10	11	7
010	BH5/0.5-1.0	2	-	-	26	-	10	11	7
011	BH6/0.1-0.3	2	-	-	26	-	10	11	7
012	BH6/0.5-1.0	2	-	-	-	-	10	11	7
013	BH7/0.1-0.3	2	-	-	26	-	10	11	7
014	BH7/0.5-1.0	2	-	-	-	-	10	11	7
015	BH8/0.1-0.3	2	-	-	26	-	10	11	7
016	BH8/0.5-1.0	2	-	-	-	-	10	11	7
017	BH9/0.1-0.3	2	29	14	26	11	10	11	7
018	BH9/0.5-1.0	2	-	-	26	-	10	11	7
019	BH10/0.1-0.3	2	29	14	26	11	10	11	7
020	BH10/0.5-1.0	2	-	-	26	-	10	11	7
021	BH11/0.1-0.3	2	29	14	26	11	10	11	7
022	BH11/0.5-1.0	2	-	-	26	-	10	11	7
023	BH12/0.1-0.3	2	-	-	26	-	10	11	7
024	BH12/0.5-1.0	2	-	-	-	-	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

SAMPLE RECEIPT ADVICE

SE222517

CLIENT DETAILS

Client LAND AND GROUNDWATER CONSULTING PTY LTD

Project LG2124.02 22-23 Lambridge Pl Penrith NSW

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity and TDS by Calculation - Soil	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
025	BH13/0.1-0.3	2	-	-	26	-	10	11	7
026	BH13/0.5-1.0	2	-	-	-	-	10	11	7
027	BH14/0.1-0.3	2	29	14	26	11	10	11	7
028	BH14/0.5-1.0	-	-	-	26	-	10	11	7
029	BH15/0.1-0.3	2	29	14	26	11	10	11	7
030	BH15/0.5-1.0	2	-	-	26	-	10	11	7
031	QC1	2	-	-	26	-	10	11	7
032	QC2	2	29	14	26	11	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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SAMPLE RECEIPT ADVICE

SE222517

CLIENT DETAILS

Client LAND AND GROUNDWATER CONSULTING PTY LTD

Project LG2124.02 22-23 Lambridge Pl Penrith NSW

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	Total Recoverable Elements in Soil/Waste
001	BH1/0.1-0.3	2	1	1	7
002	BH1/0.5-1.0	-	1	1	7
003	BH2/0.1-0.3	2	1	1	7
004	BH2/0.5-1.0	-	1	1	7
005	BH3/0.1-0.3	2	1	1	7
006	BH3/0.5-1.0	-	1	1	7
007	BH4/0.1-0.3	2	1	1	7
008	BH4/0.5-1.0	-	1	1	7
009	BH5/0.1-0.3	2	1	1	7
010	BH5/0.5-1.0	-	1	1	7
011	BH6/0.1-0.3	2	1	1	7
012	BH6/0.5-1.0	-	1	1	7
013	BH7/0.1-0.3	2	1	1	7
014	BH7/0.5-1.0	-	1	1	7
015	BH8/0.1-0.3	2	1	1	7
016	BH8/0.5-1.0	-	1	1	7
017	BH9/0.1-0.3	2	1	1	7
018	BH9/0.5-1.0	-	1	1	7
019	BH10/0.1-0.3	2	1	1	7
020	BH10/0.5-1.0	-	1	1	7
021	BH11/0.1-0.3	2	1	1	7
022	BH11/0.5-1.0	-	1	1	7
023	BH12/0.1-0.3	2	1	1	7
024	BH12/0.5-1.0	-	1	1	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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SAMPLE RECEIPT ADVICE

SE222517

CLIENT DETAILS

Client LAND AND GROUNDWATER CONSULTING PTY LTD

Project LG2124.02 22-23 Lambridge Pl Penrith NSW

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	Total Recoverable Elements in Soil/Waste
025	BH13/0.1-0.3	2	1	1	7
026	BH13/0.5-1.0	-	1	1	7
027	BH14/0.1-0.3	2	1	1	7
028	BH14/0.5-1.0	-	1	1	7
029	BH15/0.1-0.3	2	1	1	7
030	BH15/0.5-1.0	-	1	1	7
031	QC1	-	1	1	7
032	QC2	-	1	1	7

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

source: Sydney.pdf page: 1 SGS Ref: SE222517_COC

LG CONSULT

Chain of Custody Record

Project No:	LG2124.02	Lab:	SGS
Project/Site:	22-23 Lambridge Place, Penrith, NSW	Lab Quote No:	LGC141106060
Sampled By:	Gonzalo Parra	Lab Batch No:	
Phone:	0415 726 951	Date Results Required:	Standadrd TAT
Page 1 of 2		Sample Disposal After:	
Number of Eskies: 2			

				CONTAINER TYPE & PRESERVATIVE									ANALYSIS REQUIRED									
				Soil		Water																
LAB ID	SAMPLE ID	DATE	MATRIX	0.1-0.2 L Glass jar, unpreserved	- Plastic bag	0.1-0.2 L Plastic, Filtered, HNO3	0.5-1.0 L Amber glass, unpreserve	40-50ml Glass, unpreserved	0.25-1 L Plastic, unpreserved	0.2-1.0L Plastic, sterile			CL 17: TRH C6-C40/BTEXN/PAH/OC/OP/PCB/8 Metals	CL 10: TRH C6-C40/BTEXN/PAH/8	CL 7: TRH C6-C40/BTEXN/8 Metals	Asbestos	Salinity (from EC)					HOLD
1	BH1/0.1-0.3	11/8/21	Soil	1	1									X		X	X					
2	BH1/0.5-1.0	11/8/21	Soil	1											X		X					
3	BH2/0.1-0.3	11/8/21	Soil	1	1									X		X	X					
4	BH2/0.5-1.0	11/8/21	Soil	1											X		X					
5	BH3/0.1-0.3	11/8/21	Soil	1	1								X			X	X					
6	BH3/0.5-1.0	11/8/21	Soil	1										X			X					
7	BH4/0.1-0.3	11/8/21	Soil	1	1								X			X	X					
8	BH4/0.5-1.0	11/8/21	Soil	1										X			X					
9	BH5/0.1-0.3	11/8/21	Soil	1	1								X			X	X					
10	BH5/0.5-1.0	11/8/21	Soil	1										X			X					
11	BH6/0.1-0.3	11/8/21	Soil	1	1									X		X	X					
12	BH6/0.5-1.0	11/8/21	Soil	1											X		X					
13	BH7/0.1-0.3	11/8/21	Soil	1	1									X		X	X					
14	BH7/0.5-1.0	11/8/21	Soil	1											X		X					
15	BH8/0.1-0.3	11/8/21	Soil	1	1									X		X	X					
16	BH8/0.5-1.0	11/8/21	Soil	1											X		X					
17	BH9/0.1-0.3	11/8/21	Soil	1	1								X			X	X					
18	BH9/0.5-1.0	11/8/21	Soil	1										X			X					
19	BH10/0.1-0.3	11/8/21	Soil	1	1								X			X	X					
20	BH10/0.5-1.0	11/8/21	Soil	1										X			X					
21	BH11/0.1-0.3	11/8/21	Soil	1	1								X			X	X					
22	BH11/0.5-1.0	11/8/21	Soil	1										X			X					
23	BH12/0.1-0.3	11/8/21	Soil	1	1									X		X	X					
24	BH12/0.5-1.0	11/8/21	Soil	1											X		X					
25	BH13/0.1-0.3	11/8/21	Soil	1	1									X		X	X					
26	BH13/0.5-1.0	11/8/21	Soil	1											X		X					
27	BH14/0.1-0.3	11/8/21	Soil	1	1								X			X	X					
28	BH14/0.5-1.0	11/8/21	Soil	1										X								
			TOTALS	28	14																	

Relinquished By:			Received By:			Custody Seals Intact	Y N
Gonzalo Parra		11/8/21	George Zhi [redacted]		11/8/21	Samples Received Chilled	Y (N)
NAME	SIGNATURE	DATE	NAME	SIGNATURE	DATE	Method of Shipment	

NOTES: 11/8/21 @ 2:30pm

SGS EHS Sydney COC

SE222517

Land & Groundwater Consulting Pty Ltd ABN 65 162 117 928
13/80-84 Illawarra Road
Marrickville NSW 2204

web www.lgconsult.com.au
email
email gparra@lgconsult.com.au

Document Set ID: 9730951
Version: 1, Version Date: 10/09/2021

LG CONSULT

Chain of Custody Record

Project No:	LG2124.02	Lab:	SGS
Project/Site:	22-23 Lambridge Place, Penrith, NSW	Lab Quote No:	LGC141106060
Sampled By:	Gonzalo Parra	Lab Batch No:	
Phone:	0415 726 951	Date Results Required:	Standadrd TAT
Page 2 of 2		Sample Disposal After:	
Number of Eskies: 2			

CONTAINER TYPE & PRESERVATIVE / **ANALYSIS REQUIRED**

LAB ID	SAMPLE ID	DATE	MATRIX	Soil 0.1-0.2 L Glass jar, unpreserved	Soil - Plastic bag	Water 0.1-0.2 L Plastic, Filtered, HNO3	Water 0.5-1.0 L Amber glass, unpreserved	Water 40-50ml Glass, unpreserved	Water 0.25-1 L Plastic, unpreserved	Water 0.2-1.0L Plastic, sterile	CL 17: TRH C6-C40/BTEXN/PAH/OC/OP/PCB/8 Metals	CL 10: TRH C6-C40/BTEXN/PAH/8	CL 7: TRH C6-C40/BTEXN/8 Metals	Asbestos	Salinity (from EC)	HOLD
29	BH15/0.1-0.3	11/8/21	Soil	1	1						X			X	X	
30	BH15/0.5-1.0	11/8/21	Soil	1	–							X			X	
31	QC1	11/8/21	Soil	1	–							X			X	
32	QC2	11/8/21	Soil	1							X				X	
			TOTALS	4	2											

Relinquished By: Gonzalo Parra (NAME)	[signature] (SIGNATURE)	11/8/21 (DATE)	Received By: George Zhi (NAME)	[redacted] (SIGNATURE)	11/8/21 @ 2:30pm (DATE)	Custody Seals Intact	Y N
						Samples Received Chilled	Y (N)
						Method of Shipment	

NOTES:

Land & Groundwater Consulting Pty Ltd ABN 65 162 117 928
13/80-84 Illawarra Road
Marrickville NSW 2204

web www.lgconsult.com.au
email
email gparra@lgconsult.com.au

Document Set ID: 9730951
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