Douglas PARTNERS

GROUNDED EXPERTISE

Report on Due Diligence Contamination Testing

Proposed Mixed Use Residential Development

601 Pacific Highway, St Leonards NSW

Prepared for Stockland Development Pty Limited

Project 86230.01

18 March 2026

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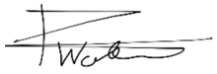
The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

Signature		Date
Author		18 March 2026
Reviewer		18 March 2026

FS604853

Douglas Partners acknowledges Australia's First Peoples as the Traditional Owners of the Land and Sea on which we operate. We pay our respects to Elders past and present and to all Aboriginal and Torres Strait Islander peoples across the many communities in which we live, visit and work. We recognise and respect their ongoing cultural and spiritual connection to Country.

Douglas PARTNERS | GROUNDED EXPERTISE

Table of Contents

Report on Due Diligence Contamination Testing
Proposed Multi-Use Residential Development
601 Pacific Highway, St Leonards NSW

1. Introduction

This report presents the results of opportunistic contamination testing undertaken by Douglas Partners Pty Ltd (Douglas) for a proposed multi-use development at 601 Pacific Highway, St Leonards NSW (the 'site'). The site is shown on Drawing 1, Appendix A. This due diligence contamination testing report has been prepared by Douglas and is submitted to the Department of Planning, Housing and Infrastructure (DPHI) in support of the SSDA (SSD-85848713) and concurrent rezoning proposal for a new mixed-use development at 601 Pacific Highway, St Leonards (the site). Further details on the proposed development are provided in Section 3.

The testing was undertaken for Stockland Commercial Property in accordance with Douglas' proposal 86230.01.P.001.Rev2 dated 17 September 2024.

Douglas conducted a geotechnical investigation at the site, reported under separate cover titled *Report on Geotechnical Investigation, Proposed Residential Building, 601 Pacific Highway, St Leonards NSW* (Douglas, 2025). Soil and groundwater samples were taken opportunistically during that investigation and analysed for a range of potential contaminants. The objective of this report on contamination testing was to present the results of sampling and testing against applicable assessment criteria.

This report must be read in conjunction with all appendices.

The following key guidelines were consulted in the preparation of this report:

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013).

2. Background

Stockland Development (Stockland) submitted an EOI for an SSDA and concurrent rezoning proposal on 17th January 2025 through the Housing Delivery Authority Pathway (HDA). At its Briefing on 19th February 2025, the HDA recommended to the Minister that the applicant's project be declared SSD, for the reason that it sufficiently satisfied the objectives and criteria of the HDA. The project was declared as SSD in the State Significant Development Declaration Order 2025 (No 2) (26 February 2025).

A request for SEARs was lodged on the 6th of June 2025 with SEARS received on the 4th of July 2025.

This report has been prepared to address the following relevant Secretary's Environmental Assessment Requirements (SEARs) set out in the Table 1 below.

Table 1: Secretary's Environmental Assessment Requirements relevant to this report

SEARs	Report Reference (how addressed)
13. Contamination and Remediation In accordance with Chapter 4 of the State Environmental Planning Policy (Resilience and Hazards) 2021, assess and quantify and soil and groundwater contamination and demonstrate that the site is suitable (or will be made suitable after remediation) for the development.	Report as a whole presents the results of soil and groundwater testing, demonstrating a low risk of contamination: Section 8: Field and laboratory results. Section 9. Discussion of results. This report will accompany a preliminary site (contamination) investigation report by Golder, and a remediation action plan (RAP) by Douglas, collectively demonstrating that the site can be made suitable for the proposed development through implementation of the RAP. Douglas is also preparing a detailed site investigation (DSI) report which will state that the site can be made suitable for proposed development subject to implementation of the RAP.

3. Proposed development

The proposal seeks consent for the following:

- An amendment to the North Sydney Local Environmental Plan 2013 (NSLEP 2013) to rezone the site from E2 Commercial Centre to MU1 Mixed Use and to amend the minimum non-residential floor space ratio development standard under Clause 4.4A from 20:1 to 1:1.
- Demolition of the existing 14 storey commercial office building that is currently on the site.
- Site excavation, remediation and other preparatory works.
- Construction and operation of a new 52 storey (RL264.50) mixed use shop top housing development, with a FSR of 20:1 (maximum GFA of 56,880m2), comprising:
  - 538 dwellings including 508 Build-to-Sell apartments and 30 Affordable Housing apartments across a mix of apartment typologies.
  - A contribution of 5% of the residential GFA toward Affordable Housing.
  - Retail and commercial land uses at the ground and podium levels.
  - Internal and external residential amenities provided throughout the building.
  - Six levels of basement carparking, comprising a total of 300 car spaces, bicycle parking, loading bays, waste areas, plant, and back of house.
- Vehicular access to the basement via Atchison Street.
- Landscaping and Public Domain works.
- Reticulation of site services and infrastructure (electricity, telecommunication, water, and sewer connections).

4. Scope of work

The scope of work comprised:

- Recovery of soil samples from the drilling augers at each of the six boreholes constructed as part of Douglas (2025), below the concrete slab, and at regular depth intervals until fill penetration and/or auger refusal; and
- PID screening of soil samples for potential volatiles.
- Dispatch of soil samples to a National Association of Testing Authorities (NATA) accredited laboratory for a combination of commonly encountered contaminants, including:
    - Eight priority heavy metals (arsenic, cadmium, chromium, copper, lead, nickel and zinc);
    - Polycyclic aromatic hydrocarbons (PAH);
    - Total recoverable hydrocarbons (TRH);
    - Benzene, toluene, ethylbenzene and xylenes (BTEX);
    - Total phenols;
    - Organochlorine pesticides (OCP);
    - Organophosphorus pesticides (OPP);
    - Polychlorinated biphenyls (PCB);
    - Asbestos identification; and
    - Toxicity characteristic leaching procedure (TCLP) testing for metals for preliminary waste classification purposes.
- Sampling of groundwater from three groundwater monitoring wells installed as part of Douglas (2025) using low-flow minimal drawdown sampling methods following collection of stabilised field parameters for pH, temperature, redox, electrical conductivity (EC) and turbidity;
- Dispatch of groundwater samples to a NATA accredited laboratory for the analysis of heavy metals, TRH, BTEX, PAH, OCP, OPP, PCB and VOC testing. QA/QC testing included an intra-laboratory replicate, trip spike and blank;
- Comparison of the analytical data against the applicable assessment criteria published in the national guidelines NEPC (2013), plus any other relevant guidelines; and
- Preparation of this report.

5. Site information

The site is located on Cammeraygal country at 601 Pacific Highway, St Leonards within North Sydney (LGA). The site is legally described as Lot 71 in DP749690 and has a total area of 2,844 m^2. The site is 4.5 km north of the Sydney CBD, 3 km from the North Sydney CBD, and within proximity to the centres of St Leonards, Chatswood, and Macquarie Park. The site is located 350 metres (walking distance) from St Leonards train station and approximately 400 m (walking distance) from the Crows Nest Metro station.

The site is zoned as E2 – Commercial Centre. The surrounding landscape has combination of commercial E2, MU1 mixed use and both R2 low density and R4 high density residential zoning.

A site aerial and location plan is provided at Figure 1 below.

Figure 1. Site Location and Boundary

Additional site information is presented in (Douglas, 2025).

6. Sampling and analysis plan

6.1 Data quality objectives

The contamination sampling and testing was undertaken with reference to the seven-step data quality objectives (DQO) process which is provided in Appendix B Schedule B2, NEPC (2013). The data quality objective process is outlined in Appendix D.

6.2 Soil sampling

Based on the DQOs the following sampling rationale was adopted.

Borehole locations were selected for geotechnical investigation purposes, and were opportunistically sampled for this contamination assessment. Borehole locations are shown on Drawing 1, in Appendix A.

Soil samples were collected from each borehole (BH101 to BH106) at the surface (or below slab) of the fill and at regular depth intervals or where changes in lithology or signs of contamination were observed. Sampling for contamination testing purposes was carried out to a maximum depth of 1.5 m below ground level (bgl).

At least one sample per borehole in shallow fill was analysed for the full suite of analytes listed in Section 3, and additional samples were tested where fill was deeper, or signs of contamination were noted. Samples were selected from boreholes spread across the site to provide a reasonable overall coverage.

The general sampling methods are described in the fieldwork methodology, included in Appendix G.

6.3 Groundwater sampling

Groundwater was sampled opportunistically from groundwater wells installed at BH01, BH03 and BH06 from essentially the middle of the well's slotted screen section. Well screen details are shown on the borehole logs in Appendix C. Monitoring well locations are shown in Drawing 1, Appendix A.

Laboratory testing included heavy metals, TRH, BTEX, PAH, OCP, OPP, PCB, and VOCs to assess general groundwater quality from site contamination and dewatering perspectives.

The general sampling methods are described in the fieldwork methodology, included in Appendix G.

7. Site assessment criteria

The site assessment criteria (SAC) applied in the current investigation are informed by the proposed land use and development intentions which identified human and environmental receptors to potential contamination on the site. Analytical results are assessed (as a Tier 1 assessment) against the SAC comprising primarily the investigation and screening levels of Schedule B1 of NEPC (2013).

The investigation and screening levels applied comprise levels adopted for a generic Residential B land use scenario (as an initial conservative screen), notwithstanding that the proposed development is a mixed use with multiple basement levels. The derivation of the SAC is in Appendix F, and the adopted SAC are listed on the summary analytical results tables in Appendix E.

8. Results

8.1 Fieldwork results

8.1.1 Soil

The borehole logs for this assessment are included in Appendix C. The logs recorded the following general sub-surface soil profile.

Pavement:	BH01 and BH02 comprised of a double concrete slab, 250mm and 180mm deep respectively with binding sand separating the layers. BH03-BH06 comprised of a single 150mm thick concrete slab.
Fill:	Fill materials comprised of gravels / sand to maximum depths between 0.25 m and 1.0 m bgl. Sandy clays are observed below this layer maximum depth of between 0.7 m and 2.60 m bgl. BH04 contained no clay layer and consisted of solely gravels / sands to a depth of 0.6 m bgl.
Residual soils:	No residual soil observed.
Ashfield Shale:	Typically, very low to low strength, highly weathered siltstone encountered at depths between 0.6 m and 4.8 m; overlying
Mittagong Formation:	Interbedded and interlaminated siltstone and fine-grained sandstone, of very low to high strength, at depths between 4.05 m and 14.6 m; overlying
Hawkesbury Sandstone:	Medium to coarse grained Hawkesbury Sandstone, encountered at depths of between 12.0 m and 31.5 m, typically medium to high strength. No Hawkesbury sandstone was encountered in BH03, BH05 and BH06.

Visual anthropogenic inclusions were noted in BH05 as “trace PVC fragments”.

No olfactory evidence was observed during the drilling.

8.1.2 Groundwater

Groundwater wells were installed in BH01, BH03 and BH06. Well details are included in the borehole logs in Appendix C and summarised in Table 8 below. Free groundwater was only observed at 25.2 m bgl during auger drilling in borehole BH04, however no well was constructed at this location. The necessary introduction of water to the borehole while wash boring or rock coring precluded any further groundwater observations during drilling.

During groundwater sampling (after well development), groundwater levels were measured at 10.83 m bgl for BH01, 6.73 m bgl for BH03 and 3.4 m bgl for BH06. BH05 (82.4 m AHD, 82.4 m AHD and 81.3 m AHD respectively). It should be noted that groundwater levels are affected by climatic conditions and soil permeability and will therefore vary with time.

It is noted that the well construction was designed for geotechnical investigation purposes and therefore may not be ideal to detect free phase product should it be present due to a perched water table.

Table 2: Summary of well installation and groundwater levels

Well ID	Surface Level (RL m AHD)	Standing water level (m bgl)	Standing water level (RL m AHD)	Screened Depth (m bgl)*	Screened geology
BH01	82.4	10.83	71.57	3.1 – 14.8	Siltstone (Ashfield Shale), Interbedded and interlaminated Siltstone with fine grained sandstone (Mittagong Formation) and Sandstone (Hawkesbury Sandstone)
BH03	82.4	6.73	75.67	0.7 – 12.1	Siltstone (Ashfield Shale), Interbedded and interlaminated Siltstone with fine grained sandstone (Mittagong Formation)
BH06	81.3	3.40	77.9	2.00 – 11.05	Siltstone (Ashfield Shale), Interbedded and interlaminated Siltstone with fine grained sandstone (Mittagong Formation)

Notes: *Screened depth in this table refers to the depth range where the slotted well pipe has been installed

Groundwater sampling was carried out after stabilised groundwater readings were obtained for each groundwater well and are presented in Table 3.

Table 3: Stabilised groundwater readings prior to sampling on 28 November 2024

Borehole	Temperature (°C)	Dissolved oxygen (mg/L)	Electrical conductivity (mS/cm)	pH	Redox (mV)	Turbidity
BH01	20.4	1.26	1290	5.07	122.1	335
BH04	20.9	1.07	530	6.29	-31.5	129
BH05	21.1	2.48	620	5.65	118.5	334

8.2 Laboratory analytical results

The results of laboratory analysis are summarised in the following tables in Appendix E:

- Table E1: Summary of Laboratory Results - Soil Site Assessment Results;
- Table E2: Summary of Laboratory Results – Groundwater; and
- Table E3: Summary of Laboratory Results – Preliminary Waste Classification.

The laboratory certificates of analysis together with the chain of custody and sample receipt information are provided in Appendix H.

8.3 Data quality assurance and quality control

The field and laboratory data quality assurance and quality control (QA/QC) procedures and results are summarised in the following Table 4. Reference should be made to the field work methodology and the laboratory results / certificates of analysis for further details. The relative percentage difference (RPD) results, along with the other field QC samples are included in the summary results tables in Appendix I.

Table 4: Field and laboratory quality control

Item	Evaluation / acceptance criteria	Compliance
Analytical laboratories used	NATA accreditation	C
Holding times	Various based on type of analysis	C
Intra-laboratory replicates	10% of primary samples; <30% RPD	PC
Trip spikes	1 per sampling event; 60-140% recovery	C
Trip blanks	1 per sampling event; <PQL	C
Laboratory / reagent blanks	1 per batch; <PQL	C
Laboratory duplicate	1 per lab batch; as laboratory certificate	C
Matrix spikes	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	C
Surrogate spikes	All organics analysis; 70-130% recovery (inorganics); 60-140% recovery (organics)	C
Control samples	1 per lab batch; 70-130% recovery (inorganics); 60-140% recovery (organics)	C
Standard operating procedures (SOP)	Adopting SOP for all aspects of the sampling field work	C

Notes:
C = compliance; PC = partial compliance; NC = non-compliance

The RPD results were all within the acceptable range, with the exception of those indicated in Tables QA1 and QA1W in Appendix I. The exceedances are not, however, considered to be of concern given that:

- The actual differences in the concentrations of the replicate pair where the RPD exceedance occurred were typically low;
- The replicate pairs were collected from fill soils which by its nature are heterogeneous; and
- All other QA/QC parameters met the data quality indicators.

In summary, the QC data is determined to be of sufficient quality for the primary analytical results to be considered acceptable for the assessment.

9. Discussion

9.1 Soils

The analytical results for all contaminants tested (heavy metals, TRH, BTEX, PAH, OCP, OPP, PCB, and asbestos) in all samples were below the SAC. No asbestos was detected in the analysed samples using the testing method implemented.

9.2 Groundwater

The analytical results for all contaminants tested (heavy metals, TRH, BTEX, PAH, OCP, OPP and PCB) in all samples were below the SAC with the exception of the following:

- Total chromium in samples BH03 (2 µg/L) and BH06 (9 µg/L) which exceeded the ANZG 95% freshwater ecological guideline of 1.0 µg/L;
- Copper in samples BH01 (13 µg/L), BH03 (24 µg/L) and BH06 (36 µg/L) which exceeded the ANZG 95% freshwater ecological guideline of 1.4 µg/L;
- Lead in sample BH06 (8 µg/L), which exceeded the ANZG 95% freshwater ecological guideline of 3.4 µg/L;
- Nickel in samples BH01 (130 µg/L), BH03 (22 µg/L) and BH06 (28 µg/L) which exceeded the ANZG 95% freshwater ecological guideline level of 11 µg/L;
- Zinc in samples BH01 (270 µg/L), BH03 (59 µg/L) and BH01 (110 µg/L) which exceeded the ANZG 95% freshwater ecological guideline level of 8 µg/L;
- Dissolved copper in samples BH01 (3.0 µg/L) and BH06 (3.0 µg/L) which exceeded the ANZG 95% freshwater ecological guideline of 1.4 µg/L;
- Dissolved nickel in samples BH01 (100 µg/L), BH03 (17 µg/L) and BH06 (15 µg/L) which exceeded the ANZG 95% freshwater ecological guideline level of 11 µg/L;
- Dissolved zinc in samples BH01 (120 µg/L), BH03 (28 µg/L) and BH06 (41 µg/L) which exceeded the ANZG 95% freshwater ecological guideline level of 8 µg/L;
- Bromodichloromethane in sample BH03 (5 µg/L) which has no SAC;
- Dibromochloromethane in sample BH03 (1 µg/L) which has no SAC; and
- The Residential criteria is below the Practical Quantitation Limit (PQL) for additional analytes in the categories of PAHs, OCPs, OPPs, and PCBs. However, it should be noted that the sum of all analytes within each of these categories is below the PQL, indicating no detections have been made in their respective contamination groups.

It is noted also that elevated concentrations of some nutrients, anions and cations were reported for the analysed samples. Whilst these do not constitute contaminants, they will need to be considered for dewatering purposes.

9.3 Preliminary waste classification assessment

9.3.1 Fill soils

To assist with project planning, a preliminary waste classification was undertaking using the data obtained from the soil testing. The preliminary classification for fill at the site was undertaken with reference to NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (NSW EPA, 2014).

Table 5: Six step classification procedure

No.	Item	Comment	Rationale
1.	Is the waste special waste?	No	No ACM, clinical or related waste, or waste tyres were observed in the boreholes.
2.	Is the waste liquid waste?	No	The fill comprised a soil matrix.
3.	Is the waste "pre-classified"?	No	The fill is not pre-classified with reference to NSW EPA (2014).
4.	Does the waste possess hazardous waste characteristics?	No	The fill was not observed to contain or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances, corrosive substances, coal tar, batteries, lead paint or dangerous goods containers.
5.	Determining a wastes classification using chemical assessment.	Conducted	Refer to Table E3, Appendix E.
6.	Is the waste putrescible or non-putrescible? [1]	Non-putrescible	The fill does not contain material that is considered to be putrescible.

Notes:
1. Wastes that are generally not classified as putrescible include soils, timber, garden trimmings, agricultural, forestry and crop materials, and natural fibrous organic and vegetative materials (NSW EPA, 2014).

As shown in Table E3, contaminant concentrations for the analysed fill samples exceeded the CT1 criteria for nickel at BH01/0.5-0.6, BH01/1.4-1.5, BH02/0.4-0.5, BH04/0.4-0.5, BH06/0.4-0.5 and total arsenic at BH06/0.4-0.5.

Toxicity characteristics leaching procedure (TCLP) tests were conducted for the analytes exceeding the CT1 thresholds on representative "worst case" samples. The specific contaminant concentration (SCC) and TCLP concentrations for those samples were below the contaminant thresholds SCC1 and TCLP1 for general solid waste, respectively.

Based on the above, all fill soils across the site are preliminarily classified as general solid waste (non putrescible).

This preliminary classification is not to be used for waste disposal. Further work prior to offsite disposal of any excess soil to the development is required before a formal classification suitable for waste disposal can be provided. The waste classification is to be confirmed by a qualified environmental consultant including visual and analytical assessments.

10. Conclusions and recommendations

Based on the field and testing results presented herein, the following comments are made:

- This report presents the results of opportunistic testing of soils and groundwater. It does not constitute a contamination investigation report as defined under NEPC (2013) or the NSW EPA (2020) reporting guidelines;
- The soils within the site, at the tested locations (boreholes) do not exceed the SAC applicable to a Residential B land use;
- The testing focussed on fill soils at the borehole locations. The test results suggest that the fill at the boreholes preliminarily classifies as general solid waste (non putrescible) under the NSW EPA (2014) guidelines;
- Douglas is undertaking a DSI for the site which will capture and supplement the results presented in this report, and will state that the site can be made suitable for the proposed development subject to implementation of a RAP; and
- Groundwater below the site is not considered to present a risk of harm or exposure to occupants and workers at the site. However, given the marginally elevated metals, nutrients, anion and cation concentrations discussed in Section 8.1.2, it is considered likely that some form of pre-treatment will be required to reduce these concentrations prior to disposal of water collected through a dewatering scheme. It is envisaged that would be captured in a dewatering management plan.

11. References

CRC CARE. (2017). *Risk-based Management and Remediation Guidance for Benzo(a)pyrene*. Technical Report no. 39: Cooperative Research Centre for Contamination Assessment and Remediation of the Environment.

Douglas. (2025). *Report on Geotechnical Investigation - 601 Pacific Highway, St Leonards, NSW*. Reference 86230.01.R.001.Rev1 Dated 24 October 2025.

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]*. Australian Government Publishing Services Canberra: National Environment Protection Council.

NSW EPA. (2020). *Guidelines for Consultants Reporting on Contaminated Land*. Contaminated Land Guidelines: NSW Environment Protection Authority.

NSW EPA. (2022). *Contaminated Sites, Sampling Design Guidelines*. NSW Environment Protection Authority.

NSW EPA. (2014). *Waste Classification Guidelines, Part 1: Classifying Waste*. NSW Environment Protection Authority.

12. Limitations

Douglas Partners Pty Ltd (Douglas) has prepared this report for this project at 601 Pacific Highway, St Leonards NSW in line with Douglas' proposal dated 17/09/2024 and acceptance received from Guy Bell of Stockland Commercial Property dated 19/11/2024. The work was carried out under contract No. CW96547 dated 15/11/2024. This report is provided for the exclusive use of Stockland Commercial Property for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of Douglas, does so entirely at its own risk and without recourse to Douglas for any loss or damage. In preparing this report Douglas has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after Douglas' field testing has been completed.

Douglas' advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by Douglas in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

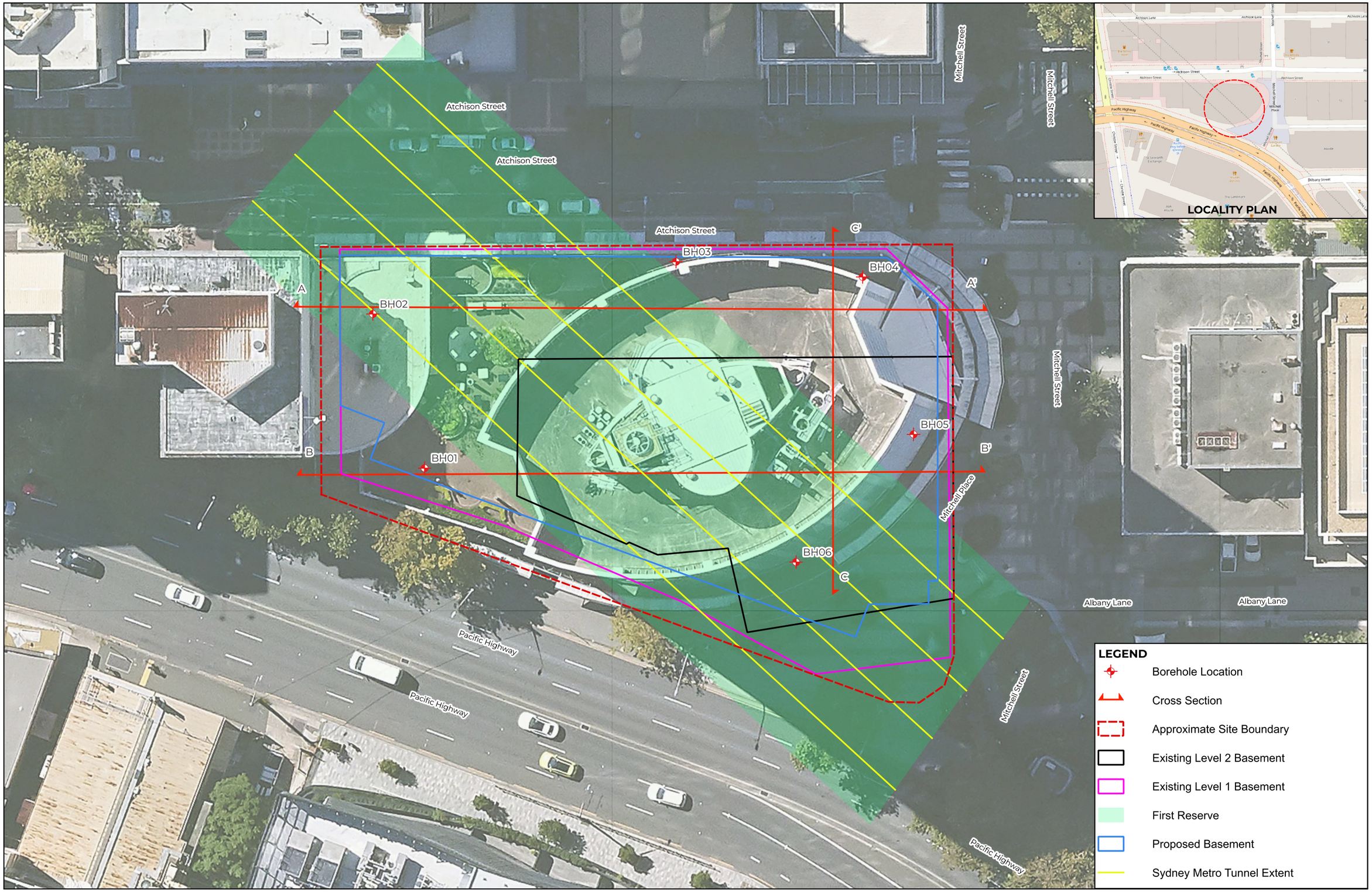
This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. Douglas cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by Douglas. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope of work for this report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of fill of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such fill may contain contaminants and hazardous building materials.

Appendix A

Drawings



REV	DESCRIPTION/COMMENT	DATE	DRAWN BY
0	INITIAL ISSUE	15.04.2025	EC

SCALE: 0 4 8 12 16 20 m
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Douglas PARTNERS
OFFICE: SYDNEY
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CLIENT:
Stockland Commercial Property

NOTE:
1: Basemap from Metromap (Dated 13.03.2025)

COORDINATE REFERENCE SYSTEM: GDA2020 / MGA zone 56

PROJECT NAME:
Proposed Commercial Building

PROJECT ADDRESS:
601 Pacific Highway, St Leonards

DRAWING TITLE:
Test Location Plan

PROJECT NO: **86230.01**
DRAWING NO: **1**
REVISION: **0**

Appendix B

About This Report

About this Report

October 2024

Introduction

These notes have been provided to amplify Douglas' report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

Douglas' reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

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

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

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

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

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, Douglas will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, Douglas cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, Douglas will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, Douglas requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. Douglas would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

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Terminology, Symbols and Abbreviations

November 2023

Introduction to Terminology, Symbols and Abbreviations

Douglas Partners' reports, investigation logs, and other correspondence may use terminology which has quantitative or qualitative connotations. To remove ambiguity or uncertainty surrounding the use of such terms, the following sets of notes pages may be attached Douglas Partners' reports, depending on the work performed and conditions encountered:

- Soil Descriptions;
- Rock Descriptions; and
- Sampling, insitu testing, and drilling methodologies

In addition to these pages, the following notes generally apply to most documents.

Abbreviation Codes

Site conditions may also be presented in a number of different formats, such as investigation logs, field mapping, or as a written summary. In some of these formats textual or symbolic terminology may be presented using textual abbreviation codes or graphic symbols, and, where commonly used, these are listed alongside the terminology definition. For ease of identification in these note pages, textual codes are presented in these notes in the following style XW. Code usage conforms with the following guidelines:

- Textual codes are case insensitive, although herein they are generally presented in upper case; and
- Textual codes are contextual (i.e. the same or similar combinations of characters may be used in different contexts with different meanings (for example `PL` is used for plastic limit in the context of soil moisture condition, as well as in `PL(A)` for point load test result in the testing results column)).

Data Integrity Codes

Subsurface investigation data recorded by Douglas Partners is generally managed in a highly structured database environment, where records "span" between a top and bottom depth interval. Depth interval "gaps" between records are considered to introduce ambiguity, and, where appropriate, our practice guidelines may require contiguous data sets. Recording meaningful data is not always appropriate (for example assigning a "strength" to a concrete pavement) and the following codes may be used to maintain contiguity in such circumstances.

Term	Description	Abbreviation Code
Core loss	No core recovery	KL
Unknown	Information was not available to allow classification of the property. For example, when auguring in loose, saturated sand auger cuttings may not be returned.	UK
No data	Information required to allow classification of the property was not available. For example if drilling is commenced from the base of a hole predrilled by others	ND
Not Applicable	Derivation of the properties not appropriate or beyond the scope of the investigation. For example providing a description of the strength of a concrete pavement	NA

Graphic Symbols

Douglas Partners' logs contain a "graphic" column which provides a pictorial representation of the basic composition of the material. The symbols used are directly representing the material name stated in the adjacent "Description of Strata" column, and as such no specific graphic symbology legend has been provided in these notes.

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Soil Descriptions

Terminology
Symbols
Abbreviations

March 2024

Introduction

All materials which are not considered to be "in-situ rock" are described in general accordance with the soil description model of AS 1726-2017 Part 6.1.3, and can be broken down into the following description structure:

The "classification" comprises a two character "group symbol" providing a general summary of dominant soil characteristics. The "name" summarises the particle sizes within the soil which most influence its behaviour. The detailed description presents more information about composition, condition, structure, and origin of the soil.

Classification, naming and description of soils require the relative proportion of particles of different sizes within the whole soil mixture to be considered.

Particle size designation and Behaviour Model

Solid particles within a soil are differentiated on the basis of size.

The engineering behaviour properties of a soil can subsequently be modelled to be either "fine grained" (also known as "cohesive" behaviour) or "coarse grained" ("non cohesive" behaviour), depending on the relative proportion of fine or coarse fractions in the soil mixture.

Particle Size Designation	Particle Size (mm)	Behaviour Model	
		Behaviour	Approximate Dry Mass
Boulder	>200	Excluded from particle behaviour model as "oversize"	
Cobble	63 - 200		
Gravel[1]	2.36 - 63	Coarse	>65%
Sand[1]	0.075 - 2.36		
Silt	0.002 - 0.075	Fine	>35%
Clay	<0.002		

[1] – refer grain size subdivision descriptions below

The behaviour model boundaries defined above are not precise, and the material behaviour should be assumed from the name given to the material (which considers the particle fraction which dominates the behaviour, refer "component proportions" below), rather than strict observance of the proportions of particle sizes. For example, if a material is named a "Sandy CLAY", this is indicative that the material exhibits fine grained behaviour, even if the dry mass of coarse grained material may exceed 65%.

Component proportions

The relative proportion of the dry mass of each particle size fraction is assessed to be a "primary", "secondary", or "minor" component of the soil mixture, depending on its influence over the soil behaviour.

Component Proportion Designation	Definition[1]	Relative Proportion	
		In Fine Grained Soil	In Coarse Grained Soil
Primary	The component (particle size designation, refer above) which dominates the engineering behaviour of the soil	The clay/silt component with the greater proportion	The sand/gravel component with the greater proportion
Secondary	Any component which is not the primary, but is significant to the engineering properties of the soil	Any component with greater than 30% proportion	Any granular component with greater than 30%; or Any fine component with greater than 12%
Minor[2]	Present in the soil, but not significant to its engineering properties	All other components	All other components

[1] As defined in AS1726-2017 6.1.4.4

[2] In the detailed material description, minor components are split into two further sub-categories. Refer "identification of minor components" below.

Composite Materials

In certain situations, a lithology description may describe more than one material, for example, collectively describing a layer of interbedded sand and clay. In such a scenario, the two materials would be described independently, with the names preceded or followed by a statement describing the arrangement by which the materials co-exist. For example, "INTERBEDDED Silty CLAY AND SAND".

Classification

The soil classification comprises a two character group symbol. The first character identifies the primary component. The second character identifies either the grading or presence of fines in a coarse grained soil, or the plasticity in a fine grained soil. Refer AS1726-2017 6.1.6 for further clarification.

Soil Name

For most soils, the name is derived with the primary component included as the noun (in upper case), preceded by any secondary components stated in an adjective form. In this way, the soil name also describes the general composition and indicates the dominant behaviour of the material.

Component [1]	Prominence in Soil Name
Primary	Noun (eg "CLAY")
Secondary	Adjective modifier (eg "Sandy")
Minor	No influence

[1] – for determination of component proportions, refer component proportions on previous page

For materials which cannot be disaggregated, or which are not comprised of rock or mineral fragments, the names "ORGANIC MATTER" or "ARTIFICIAL MATERIAL" may be used, in accordance with AS1726-2017 Table 14.

Commercial or colloquial names are not used for the soil name where a component derived name is possible (for example "Gravelly SAND" rather than "CRACKER DUST").

Materials of "fill" or "topsoil" origin are generally assigned a name derived from the primary/secondary component (where appropriate). In log descriptions this is preceded by uppercase "FILL" or "TOPSOIL". Origin uncertainty is indicated in the description by the characters (?), with the degree of uncertainty described (using the terms "probably" or "possibly" in the origin column, or at the end of the description).

Identification of minor components

Minor components are identified in the soil description immediately following the soil name. The minor component fraction is usually preceded with a term indicating the relative proportion of the component.

Minor Component Proportion Term	Relative Proportion	
	In Fine Grained Soil	In Coarse Grained Soil
With	All fractions: 15-30%	Clay/silt: 5-12% sand/gravel: 15-30%
Trace	All fractions: 0-15%	Clay/silt: 0-5% sand/gravel: 0-15%

The terms "with" and "trace" generally apply only to gravel or fine particle fractions. Where cobbles/boulders are encountered in minor proportions (generally less than about 12%) the term "occasional" may be used. This term describes the sporadic distribution of the material within the confines of the investigation excavation only, and there may be considerable variation in proportion over a wider area which is difficult to factually characterise due to the relative size of the particles and the investigation methods.

Soil Composition

Plasticity

Descriptive Term	Laboratory liquid limit range	
	Silt	Clay
Non-plastic materials	Not applicable	Not applicable
Low plasticity	≤50	≤35
Medium plasticity	Not applicable	>35 and ≤50
High plasticity	>50	>50

Note, Plasticity descriptions generally describe the plasticity behaviour of the whole of the fine grained soil, not individual fine grained fractions.

Grain Size

Type		Particle size (mm)
Gravel	Coarse	19 - 63
	Medium	6.7 - 19
	Fine	2.36 – 6.7
Sand	Coarse	0.6 - 2.36
	Medium	0.21 - 0.6
	Fine	0.075 - 0.21

Grading

Grading Term	Particle size (mm)
Well	A good representation of all particle sizes
Poorly	An excess or deficiency of particular sizes within the specified range
Uniformly	Essentially of one size
Gap	A deficiency of a particular size or size range within the total range

Note, AS1726-2017 provides terminology for additional attributes not listed here.

Soil Condition

Moisture

The moisture condition of soils is assessed relative to the plastic limit for fine grained soils, while for coarse grained soils it is assessed based on the appearance and feel of the material. The moisture condition of a material is considered to be independent of stratigraphy (although commonly these are related), and this data is presented in its own column on logs.

Applicability	Term	Tactile Assessment	Abbreviation code
Fine	Dry of plastic limit	Hard and friable or powdery	w<PL
	Near plastic limit	Can be moulded	w=PL
	Wet of plastic limit	Water residue remains on hands when handling	w>PL
	Near liquid limit	"oozes" when agitated	w=LL
	Wet of liquid limit	"oozes"	w>LL
Coarse	Dry	Non-cohesive and free running	D
	Moist	Feels cool, darkened in colour, particles may stick together	M
	Wet	Feels cool, darkened in colour, particles may stick together, free water forms when handling	W

The abbreviation code NDF, meaning "not-assessable due to drilling fluid use" may also be used.

Note, observations relating to free ground water or drilling fluids are provided independent of soil moisture condition.

Consistency/Density/Compaction/Cementation/Extremely Weathered Material

These concepts give an indication of how the material may respond to applied forces (when considered in conjunction with other attributes of the soil). This behaviour can vary independent of the composition of the material, and on logs these are described in an independent column and are generally mutually exclusive (i.e it is inappropriate to describe both consistency and compaction at the same time). The method by which the behaviour is described depends on the behaviour model and other characteristics of the soil as follows:

- In fine grained soils, the "consistency" describes the ease with which the soil can be remoulded, and is generally correlated against the materials undrained shear strength;
- In granular materials, the relative density describes how tightly packed the particles are, and is generally correlated against the density index;
- In anthropogenically modified materials, the compaction of the material is described qualitatively;
- In cemented soils (both natural and anthropogenic), the cemented "strength" is described qualitatively, relative to the difficulty with which the material is disaggregated; and
- In soils of extremely weathered material origin, the engineering behaviour may be governed by relic rock features, and expected behaviour needs to be assessed based the overall material description.

Quantitative engineering performance of these materials may be determined by laboratory testing or estimated by correlated field tests (for example penetration or shear vane testing). In some cases, performance may be assessed by tactile or other subjective methods, in which case investigation logs will show the estimated value enclosed in round brackets, for example (VS).

Consistency (fine grained soils)

Consistency Term	Tactile Assessment	Undrained Shear Strength (kPa)	Abbreviation Code
Very soft	Extrudes between fingers when squeezed	<12	VS
Soft	Mouldable with light finger pressure	>12 - ≤25	S
Firm	Mouldable with strong finger pressure	>25 - ≤50	F
Stiff	Cannot be moulded by fingers	>50 - ≤100	St
Very stiff	Indented by thumbnail	>100 - ≤200	VSt
Hard	Indented by thumbnail with difficulty	>200	H
Friable	Easily crumbled or broken into small pieces by hand	-	Fr

Relative Density (coarse grained soils)

Relative Density Term	Density Index	Abbreviation Code
Very loose	<15	VL
Loose	>15 - ≤35	L
Medium dense	>35 - ≤65	MD
Dense	>65 - ≤85	D
Very dense	>85	VD

Note, tactile assessment of relative density is difficult, and generally requires penetration testing, hence a tactile assessment guide is not provided.

Compaction (anthropogenically modified soil)

Compaction Term	Abbreviation Code
Well compacted	WC
Poorly compacted	PC
Moderately compacted	MC
Variably compacted	VC

Cementation (natural and anthropogenic)

Cementation Term	Abbreviation Code
Moderately cemented	MOD
Weakly cemented	WEK

Extremely Weathered Material

AS1726-2017 considers weathered material to be soil if the unconfined compressive strength is less than 0.6 MPa (i.e. less than very low strength rock). These materials may be identified as "extremely weathered material" in reports and by the abbreviation code XWM on log sheets. This identification is not correlated to any specific qualitative or quantitative behaviour, and the engineering properties of this material must therefore be assessed according to engineering principles with reference to any relic rock structure, fabric, or texture described in the description.

Soil Origin

Term	Description	Abbreviation Code
Residual	Derived from in-situ weathering of the underlying rock	RS
Extremely weathered material	Formed from in-situ weathering of geological formations. Has strength of less than 'very low' as per as1726 but retains the structure or fabric of the parent rock.	XWM
Alluvial	Deposited by streams and rivers	ALV
Fluvial	Deposited by channel fill and overbank (natural levee, crevasse splay or flood basin)	FLV
Estuarine	Deposited in coastal estuaries	EST
Marine	Deposited in a marine environment	MAR
Lacustrine	Deposited in freshwater lakes	LAC
Aeolian	Carried and deposited by wind	AEO
Colluvial	Soil and rock debris transported down slopes by gravity	COL
Slopewash	Thin layers of soil and rock debris gradually and slowly deposited by gravity and possibly water	SW
Topsoil	Mantle of surface soil, often with high levels of organic material	TOP
Fill	Any material which has been moved by man	FILL
Littoral	Deposited on the lake or seashore	LIT
Unidentifiable	Not able to be identified	UID

Cobbles and Boulders

The presence of particles considered to be "oversize" may be described using one of the following strategies:

- Oversize encountered in a minor proportion (when considered relative to the wider area) are noted in the soil description; or
- Where a significant proportion of oversize is encountered, the cobbles/boulders are described independent of the soil description, in a similar manner to composite soils (described above) but qualified with "MIXTURE OF".

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Rock Strength

Rock strength is defined by the unconfined compressive strength, and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $I_{s(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Unconfined Compressive Strength (MPa)	Point Load Index[1] $I_{s(50)}$ MPa	Abbreviation Code
Very low	0.6 - 2	0.03 - 0.1	VL
Low	2 - 6	0.1 - 0.3	L
Medium	6 - 20	0.3 - 1.0	M
High	20 - 60	1 - 3	H
Very high	60 - 200	3 - 10	VH
Extremely high	>200	>10	EH

[1] Rock strength classification is based on UCS. The UCS to $I_{s(50)}$ ratio varies significantly for different rock types and specific ratios may be required for each site. The point load Index ranges shown above are as suggested in AS1726 and should not be relied upon without supporting evidence.

The following abbreviation codes are used for soil layers or seams of material "within rock" but for which the equivalent UCS strength is less than 0.6 MPa.

Scenario	Abbreviation Code
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The properties of the material encountered over this interval are described in the "Description of Strata" and soil properties columns.	SOIL
The material encountered has an equivalent UCS strength of less than 0.6 MPa, and therefore is considered to be soil (as per Note 1 of Table 20 of AS 1726-2017). The prominence of the material is such that it can be considered to be a seam (as defined in Table 22 of AS1726-2017) and the properties of the material are described in the defect column.	SEAM

Degree of Weathering

The degree of weathering of rock is classified as follows:

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

[1] The parent rock type, of which the residual/extremely weathered material is a derivative, will be stated in the description (where discernible).

Degree of Alteration

The degree of alteration of the rock material (physical or chemical changes caused by hot gasses or liquids at depth) is classified as follows:

Term	Description	Abbreviation Code
Extremely altered	Material is altered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.	XA
Highly altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is changed by alteration. Some primary minerals are altered to clay minerals. Porosity may be increased by leaching or may be decreased due to precipitation of secondary materials in pores.	HA
Moderately altered	The whole of the rock material is discoloured, usually by staining or bleaching to the extent that the colour of the original rock is not recognisable but shows little or no change of strength from fresh rock.	MA
Slightly altered	Rock is slightly discoloured but shows little or no change of strength from fresh rock	SA
Note: If HA and MA cannot be differentiated use DA (see below)		
Distinctly altered	Rock strength usually changed by alteration. The rock may be highly discoloured, usually by staining or bleaching. Porosity may be increased by leaching or may be decreased due to precipitation of secondary minerals in pores.	DA

Degree of Fracturing

The following descriptive classification apply to the spacing of natural occurring fractures in the rock mass. It includes bedding plane partings, joints and other defects, but excludes drilling breaks. These terms are generally not required on investigation logs where fracture spacing is presented as a histogram, and where used are presented in an unabbreviated format.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections > 100 mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e., drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

These terms may be used to describe the spacing of bedding partings in sedimentary rocks. Where used, these terms are generally presented in an unabbreviated format

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Defect Descriptions

Defect Type

Term	Abbreviation Code
Bedding plane	B
Cleavage	CL
Crushed seam	CS
Crushed zone	CZ
Drilling break	DB
Decomposed seam	DS
Drill lift	DL
Extremely Weathered seam	EW
Fault	F
Fracture	FC
Fragmented	FG
Handling break	HB
Infilled seam	IS
Joint	JT
Lamination	LAM
Shear seam	SS
Shear zone	SZ
Vein	VN
Mechanical break	MB
Parting	P
Sheared Surface	S

Rock Defect Orientation

Term	Abbreviation Code
Horizontal	H
Vertical	V
Sub-horizontal	SH
Sub-vertical	SV

Rock Defect Coating

Term	Abbreviation Code
Clean	CN
Coating	CT
Healed	HE
Infilled	INF
Stained	SN
Tight	TI
Veneer	VNR

Rock Defect Infill

Term	Abbreviation Code
Calcite	CA
Carbonaceous	CBS
Clay	CLAY
Iron oxide	FE
Manganese	MN
Pyrite	Py
Secondary material	MS
Silt	M
Quartz	Qz
Unidentified material	MU

Rock Defect Shape/Planarity

Term	Abbreviation Code
Curved	CU
Discontinuous	DIS
Irregular	IR
Planar	PR
Stepped	ST
Undulating	UN

Rock Defect Roughness

Term	Abbreviation Code
Polished	PO
Rough	RF
Smooth	SM
Slickensided	SL
Very rough	VR

Defect Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

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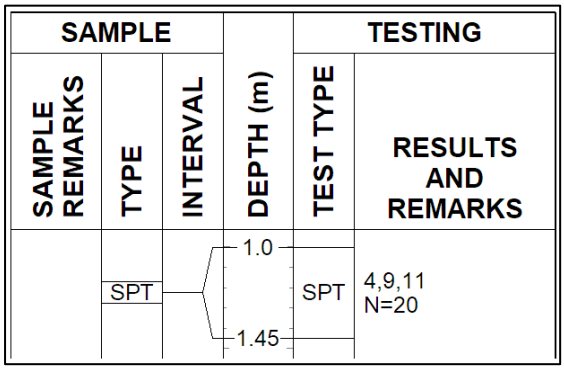
Sampling, Testing and Excavation Methodology

Terminology
Symbols
Abbreviations

October 2024

Sampling and Testing

A record of samples retained, and field testing performed is usually shown on a Douglas Partners' log with samples appearing to the left of a depth scale, and selected field and laboratory testing (including results, where relevant) appearing to the right of the scale, as illustrated below:



Sampling

The type or intended purpose for which a sample was taken is indicated by the following abbreviation codes.

Sample Type	Code
Auger sample	A
Acid Sulfate sample	ASS
Bulk sample	B
Core sample	C
Disturbed sample	D
Environmental sample	ES
Driven Tube sample	DT
Gas sample	G
Piston sample	P
Sample from SPT test	SPT
Undisturbed tube sample	U[1]
Water sample	W
Material Sample	MT
Core sample for unconfined compressive strength testing	UCS

[1] – numeric suffixes indicate tube diameter/width in mm

The above codes only indicate that a sample was retained, and not that testing was scheduled or performed.

Field and Laboratory Testing

A record that field and laboratory testing was performed is indicated by the following abbreviation codes.

Test Type	Code
Pocket penetrometer (kPa)	PP
Photo ionisation detector (ppm)	PID
Standard Penetration Test x/y =x blows for y mm penetration HB = hammer bouncing HW = fell under weight of hammer	SPT
Shear vane (kPa)	V
Unconfined compressive strength, (MPa)	UCS

Field and laboratory testing (continued)

Test Type	Code
Point load test, (MPa), axial (A), diametric (D), irregular (I)	PLT(_)
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP9/150
Perth sand penetrometer, followed by blow count penetration increment in mm (flat tip, generally in accordance with AS1289.6.3.3)	PSP/150

Groundwater Observations

▷	seepage/inflow
▽	standing or observed water level
NFGWO	no free groundwater observed
OBS	observations obscured by drilling fluids

Drilling or Excavation Methods/Tools

The drilling/excavation methods used to perform the investigation may be shown either in a dedicated column down the left-hand edge of the log, or stated in the log footer. In some circumstances abbreviation codes may be used.

Method	Abbreviation Code
Direct Push	DP
Solid flight auger. Suffixes: /T = tungsten carbide tip, /V = v-shaped tip	AD[1]
Air Track	AT
Diatube	DT[1]
Hand auger	HA[1]
Hand tools (unspecified)	HAND
Existing exposure	X
Hollow flight auger	HSA[1]
HQ coring	HQ3
HMLC series coring	HMLC
NMLC series coring	NMLC
NQ coring	NQ3
PQ coring	PQ3
Predrilled	PD
Push tube	PT[1]
Ripping tyne/ripper	R
Rock roller	RR[1]
Rock breaker/hydraulic hammer	EH
Sonic drilling	SON[1]
Mud/blade bucket	MB[1]
Toothed bucket	TB[1]
Vibrocore	VC[1]
Vacuum excavation	VE
Wash bore (unspecified bit type)	WB[1]

[1] – numeric suffixes indicate tool diameter/width in mm

Douglas PARTNERS

Cone Penetration Testing

October 2024

Introduction

The Cone Penetration Test (CPT) is a sophisticated soil profiling test carried out in-situ. A special cone shaped probe is used which is connected to a digital data acquisition system. The cone and adjoining sleeve section contain a series of strain gauges and other transducers which continuously monitor and record various soil parameters as the cone penetrates the soils.

The soil parameters measured depend on the type of cone being used, however they always include the following basic measurements

- Cone tip resistance q_c
- Sleeve friction f_s
- Inclination (from vertical) i
- Depth below ground z

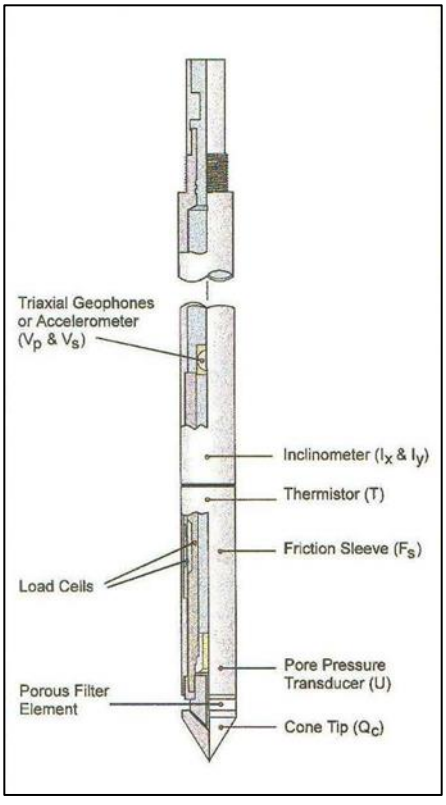


Figure 1: Cone Diagram

The inclinometer in the cone enables the verticality of the test to be confirmed and, if required, the vertical depth can be corrected.

The cone is thrust into the ground at a steady rate of about 20 mm/sec, usually using the hydraulic rams of a purpose built CPT rig, or a drilling rig. The testing is carried out in accordance with the Australian Standard AS1289 Test 6.5.1.

Figure 2: Purpose built CPT rig

The CPT can penetrate most soil types and is particularly suited to alluvial soils, being able to detect fine layering and strength variations. With sufficient thrust the cone can often penetrate a short distance into weathered rock. The cone will usually reach refusal in coarse filling, medium to coarse gravel and on very low strength or better rock. Tests have been successfully completed to more than 60 m.

Types of CPTs

Douglas Partners (and its subsidiary GroundTest) owns and operates the following types of CPT cones:

Type	Measures
Standard	Basic parameters (qc, fs, i & z)
Piezocone	Dynamic pore pressure (u) plus basic parameters. Dissipation tests estimate consolidation parameters
Conductivity	Bulk soil electrical conductivity (□) plus basic parameters
Seismic	Shear wave velocity (Vs), compression wave velocity (Vp), plus basic parameters

Strata Interpretation

The CPT parameters can be used to infer the Soil Behaviour Type (SBT), based on normalised values of cone resistance (Qt) and friction ratio (Fr). These are used in conjunction with soil classification charts, such as the one below (after Robertson 1990)

Cone Penetration testing

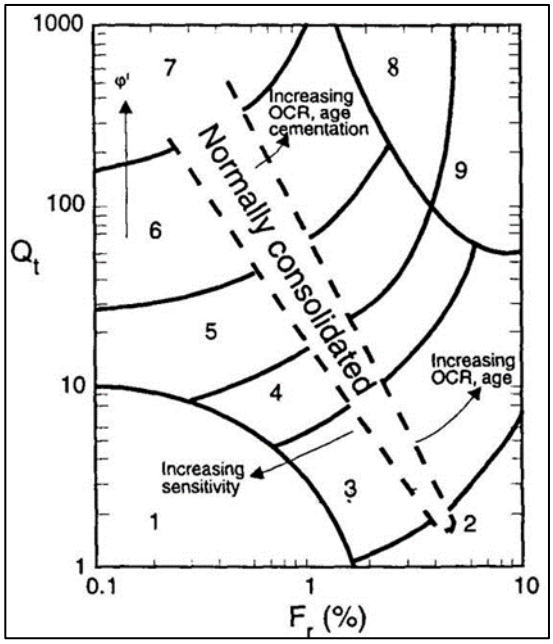


Figure 3: Soil Classification Chart

Douglas' in-house CPT software provides computer aided interpretation of soil strata, generating soil descriptions and strengths for each layer. The software can also produce plots of estimated soil parameters, including modulus, friction angle, relative density, shear strength and over consolidation ratio.

Douglas' CPT software helps our engineers quickly evaluate the critical soil layers and then focus on developing practical solutions for the client's project.

Engineering Applications

There are many uses for CPT data. The main applications are briefly introduced below:

Settlement

CPT provides a continuous profile of soil type and strength, providing an excellent basis for settlement analysis. Soil compressibility can be estimated from cone derived moduli, or known consolidation parameters for the critical layers (eg. from laboratory testing). Further, if pore pressure dissipation tests are undertaken using a piezocone, in-situ consolidation coefficients can be estimated to aid analysis.

Pile Capacity

The cone is, in effect, a small scale pile and, therefore, ideal for direct estimation of pile capacity. Douglas' in-house program ConePile can analyse most pile types and produces pile capacity versus depth plots. The analysis methods are based on proven static theory and empirical studies, taking account of scale effects, pile materials and method of installation.

The results are expressed in limit state format, consistent with the Piling Code AS2159.

Dynamic or Earthquake Analysis

CPT and, in particular, Seismic CPT are suitable for dynamic foundation studies and earthquake response analyses, by profiling the low strain shear modulus G0. Techniques have also been developed relating CPT results to the risk of soil liquefaction.

Other Applications

Other applications of CPT include ground improvement monitoring (testing before and after works), salinity and contaminant plume mapping (conductivity cone), preloading studies and verification of strength gain.

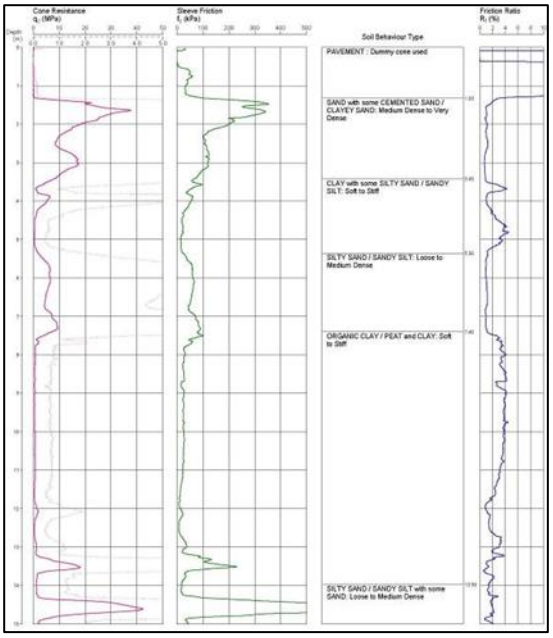


Figure 4: Sample Cone Plot

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Appendix C

Borehole Logs and Field Sheets

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333081.1, N:6255981.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH01
PROJECT No: 86230.01
DATE: 25/03/25
SHEET: 1 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN(#)	CONSIS.(*) / DENSITY.(*)	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
25/03/25 No free groundwater observed whilst augering	82	0.25	CONCRETE; reinforcement 8mm, 2 slabs 130mm thick and 90mm thick (low), second slab has no reinforcement observable, 10mm blinding sand separating slabs.		FILL	NA	NA		D	0.40 – 0.50					
		0.35	FILL / GRAVEL: dark grey; fine to medium, angular, igneous.						D						
	81	1	FILL / CLAY trace sand: dark grey; low to medium plasticity; fine sand.		FILL	PC	w<PL		D	0.90 – 1.00					
			2.00m: very poor compaction						D	1.40 – 1.50				Bentonite	
	80	2							D	1.90 – 2.00				Gravel	
		2.60	Continued as rock log												
	79	3													
	78	4													
	77	5													
	76	6													
	75	7													
	74	8													
	73	9													

NOTES: (#) Soil origin is "probable" unless otherwise stated. (*) Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: DTS 700
METHOD: DT to 0.25m, AD/T to 2.6m, NMLC to 14.80m
REMARKS: Unable to perform SPTs due to height restriction

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 2m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

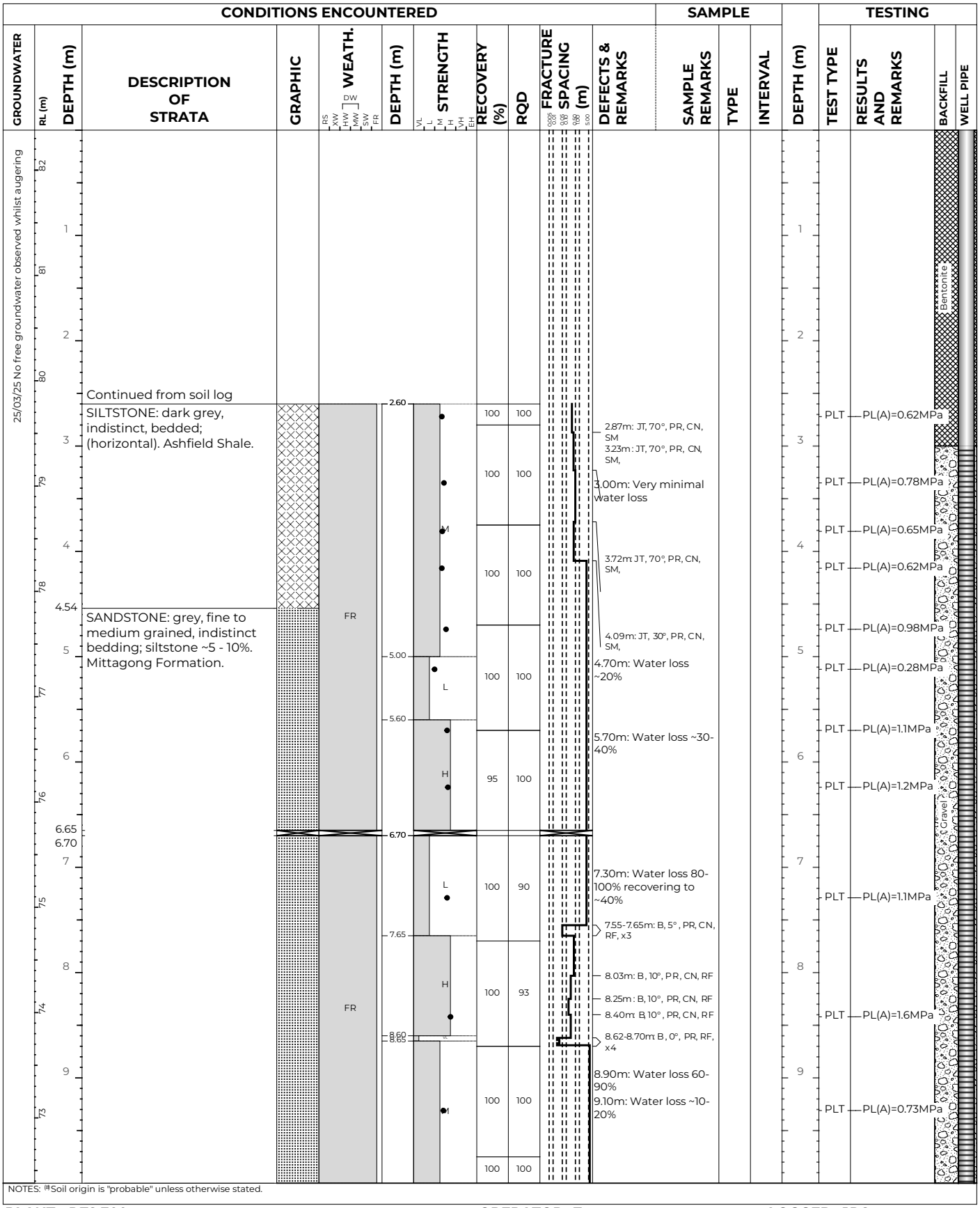
Douglas PARTNERS

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333081.1, N:6255981.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH01
PROJECT No: 86230.01
DATE: 25/03/25
SHEET: 2 of 3



NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
OPERATOR: Terratest
LOGGED: JDS
METHOD: DT to 0.25m, AD/T to 2.6m, NMLC to 14.80m
CASING: HWT to 2m
REMARKS: Unable to perform SPTs due to height restriction

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333081.1, N:6255981.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH01
PROJECT No: 86230.01
DATE: 25/03/25
SHEET: 3 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH. (PS, XW, DW, HW, MW, SW, FR)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m) (0.03, 0.06, 0.20, 0.60, >2.00)	DEFECTS & REMARKS	SAMPLE REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TESTING TEST TYPE	TESTING RESULTS AND REMARKS	BACKFILL	WELL PIPE
	72	11					M	100	100		10.80m: Water loss ~20-30%				11	PLT	PL(A)=0.76MPa	Gravel	
	71					11.50		100	100							PLT	PL(A)=0.74MPa		
	70	12.00 12	SANDSTONE: grey, medium to coarse grained, indistinct bedding. Hawkesbury Sandstone.		FR		H	100	100						12	PLT	PL(A)=1.1MPa		
	69	13													13	PLT	PL(A)=1.1MPa		
	68	14				14.20 14.25	H - VH	100	100						14	PLT	PL(A)=3.1MPa		
	67	15	Borehole discontinued at 14.80m depth. Target depth reached.																
	66	16																	
	65	17																	
	64	18																	
	63	19																	

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
METHOD: DT to 0.25m, AD/T to 2.6m, NMLC to 14.80m
REMARKS: Unable to perform SPTs due to height restriction

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 2m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333081.1, N:6255981.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH01
PROJECT No: 86230.01
DATE: 25/03/25
SHEET: 1 of 2

2.60-7.00 m depth

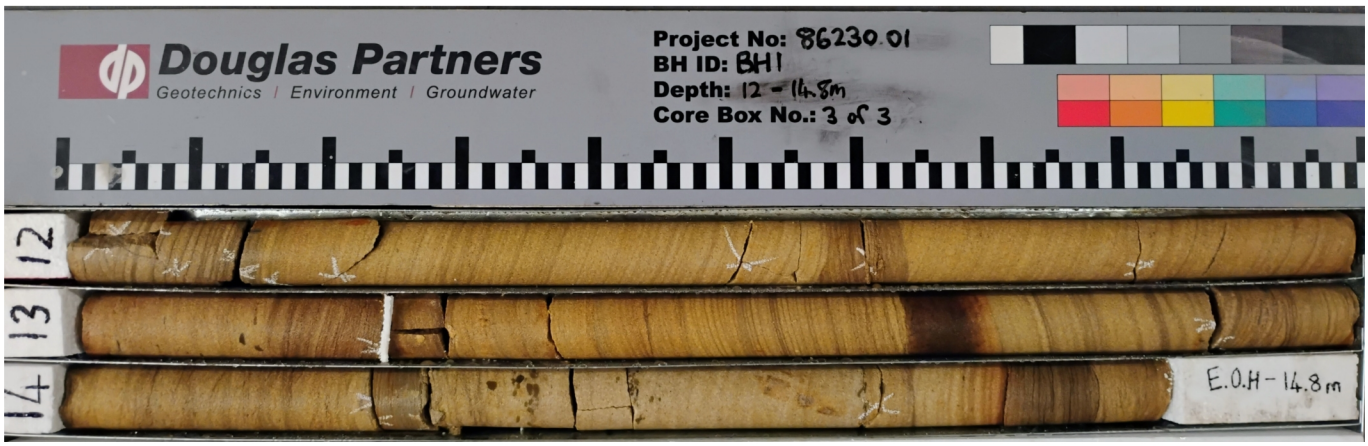
7.00-12.00 m depth

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333081.1, N:6255981.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH01
PROJECT No: 86230.01
DATE: 25/03/25
SHEET: 2 of 2



12.00-14.80 m depth

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333075.4, N:6255998.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH02
PROJECT No: 86230.01
DATE: 28/03/25
SHEET: 1 of 3

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] DENSITY.[*]	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
28/03/25 No free groundwater observed whilst augering	82	0.18	CONCRETE; 2 layers reinforcement 8mm and 4mm.			NA	NA				0		
		0.40	FILL / Gravelly SAND with clay: brownish-grey; fine to medium; medium, sub-angular, igneous gravel.		FILL	ND	M						
					FILL		D						
		0.90	FILL / Clayey SAND trace gravel: dark grey; fine to medium; low to medium plasticity clay; fine to medium, angular, igneous gravel.		FILL		w<PL						
		1.10	FILL / CLAY trace sand trace gravel: dark grey; low to medium plasticity.										
	81		Continued as rock log								1		
		2									2		
	80												
		3									3		
	79												
		4									4		
	78												
		5									5		
	77												
		6									6		
	76												
		7									7		
	75												
		8									8		
	74												
		9									9		
	73												

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: DTS 700
METHOD: DT to 0.13m, AD/T to 1.10m, NMLC to 14.10m
REMARKS:

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 1m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333075.4, N:6255998.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH02
PROJECT No: 86230.01
DATE: 28/03/25
SHEET: 2 of 3

CONDITIONS ENCOUNTERED | **SAMPLE** | **TESTING**

GROUNDWATER: 28/03/25 No free groundwater observed whilst augering

RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
82	0													0				
	1	Continued from soil log												1				
81		SILTSTONE: dark grey, indistinct bedding. Ashfield Shale.		FR	1.10	L	100	100		1.33m: JT, 40°, PR, CN, SM					PLT	PL(A)=0.12MPa		
	2				2.00		100	100						2	PLT	PL(A)=0.14MPa		
80	2.50														PLT	PL(A)=0.32MPa		
	2.63				2.63					2.50m - 3.60m: Water loss <10%								
	3						88	100						3	PLT	PL(A)=0.60MPa		
79										3.27m: JT, 45°, PR, CN, SM					PLT	PL(A)=0.66MPa		
	4			SW		M	100	100		3.90m: CZ, 0°, PR, Clay, SM, ~5mm				4	PLT	PL(A)=0.87MPa		
78										4.25m: CZ, 0°, PR, Clay, SM, ~5mm					PLT	PL(A)=0.54MPa		
	4.72									4.62-4.67m: CZ, 5°, PR, Clay								
	5	SANDSTONE: grey, fine and medium grained; with siltstone laminations and bedding. Mittagong Formation.												5	PLT	PL(A)=0.48MPa		
77		5.50m-5.80m: rip up clasts			5.30										PLT	PL(A)=0.37MPa		
	6				6.00		100	100						6				
76						H									PLT	PL(A)=1.2MPa		
	7			FR			100	100						7				
75					7.60	M									PLT	PL(A)=1.3MPa		
	8				8.05									8				
74										8.56m: CZ, 20mm					PLT	PL(A)=1.4MPa		
	9					H	100	90						9				
73															PLT	PL(A)=1.1MPa		
							100	100										

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
METHOD: DT to 0.13m, AD/T to 1.10m, NMLC to 14.10m
REMARKS:

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 1m

Generated with CORE-GS by Geroc - Split Soil-Rock Log

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333075.4, N:6255998.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH02
PROJECT No: 86230.01
DATE: 28/03/25
SHEET: 3 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH. (PS, XW, HW, DW, MW, SW, FR)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m) (0.03, 0.06, 0.20, 0.60, 2.00)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	72	11	[CONT] SANDSTONE: grey, fine and medium grained; with siltstone laminations and bedding. Mittagong Formation.		FR	10.00	M	100	100		10.60m CZ, 20mm				11	PLT	PL(A)=0.49MPa		
	71	12				10.40		100	100		11.10m - 14.10m: Water loss <10%				12	PLT	PL(A)=1.4MPa		
	70	13					H								13	PLT	PL(A)=1.8MPa		
	69	13.37	SANDSTONE: pale grey, medium to coarse grained; cross-bedded. Hawkesbury Sandstone.					87	87						14	PLT	PL(A)=1.1MPa		
	68	13.90	Borehole discontinued at 14.10m depth. Target depth reached.																
	67	15																	
	66	16																	
	65	17																	
	64	18																	
	63	19																	

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
METHOD: DT to 0.13m, AD/T to 1.10m, NMLC to 14.10m
REMARKS:

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 1m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333075.4, N:6255998.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH02
PROJECT No: 86230.01
DATE: 28/03/25
SHEET: 1 of 2

1.10-5.00 m depth

5.00-10.00 m depth

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333075.4, N:6255998.3
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH02
PROJECT No: 86230.01
DATE: 28/03/25
SHEET: 2 of 2

10.00-14.10 m depth

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commercial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333109.1, N:6256004.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH03
PROJECT No: 86230.01
DATE: 01/04/25
SHEET: 1 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
01/04/25 No free groundwater observed whilst augering	82	0.15	CONCRETE; 150mm thick.			NA			D	0.15 to 0.20	0.15			Bentonite	
		0.25	FILL / Gravelly SAND: yellow and grey; medium; fine to coarse, igneous, concrete gravel.		FILL	ND	w<PL		D	0.40 to 0.50	0.20				
		0.70	FILL / Sandy CLAY trace gravel: dark grey; low to medium plasticity; fine to coarse sand; fine gravel; shale.		FILL						0.40				
	81	1	Continued as rock log								0.50				
	80	2									1			Sand	
	79	3									2				
	78	4									3				
	77	5									4				
	76	6									5				
	75	7									6				
	74	8									7				
	73	9									8				
											9				

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: DTS 700
METHOD: DT to 0.15m, AD/T to 0.70m, NMLC to 12.10m
REMARKS:

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 0.5m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333109.1, N:6256004.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH03
PROJECT No: 86230.01
DATE: 01/04/25
SHEET: 2 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
01/04/25 No free groundwater observed whilst augering	82	0	Continued from soil log															Bentonite	
	81	1	SILTSTONE: dark grey, indistinct, bedded. Ashfield Shale.		SW	0.70	VL L M H VH EH	100	100		0.75m: JT, 35°, PR, SN Fe 0.92m: JT, 85°, PR, SN Fe 0.70m - 1.80m: Water loss <10%				1	PLT	PL(A)=1.3MPa		
	80	2				1.00		100	100						2	PLT	PL(A)=0.80MPa		
	79	3						100	100						3	PLT	PL(A)=0.61MPa		
	78	4					M H	100	100		3.30m - 4.00m: Water loss ~10% 4.13-4.15m: CZ, 0°, PR, SN Clay		SPT		3.30	PLT	PL(A)=0.91MPa		
	77	4.80	SANDSTONE: grey and pale grey, fine to medium grained, distinct, laminated; siltstone laminations and bedding. Mittagong Formation.		FR			100	100						3.75	PLT	PL(A)=0.70MPa		
	76	6						100	100		6.08m: B, ~5°, PR, CN, RF 6.49m: JT, 15°, PR, CN, RF				4	PLT	PL(A)=0.67MPa		
	75	7				7.00	H	100	90		7.28m: B, 10°, PR, RF 7.30m: B, 5°, PR, HE 7.35m: B, 50°, PR Clay 6 mm 7.41m: B, ~20°, UN, RF 7.50m: JT, 70°, PR, HE 7.62m: JT, 85°, UN, HE 7.75m: JT, 20°, UN, Clay, ~5mm				4.75	PLT	PL(A)=0.67MPa		
	74	8						100	100		8.46m: B, 5°, ST, Clay, ~2 mm 8.79m: JT, 70°, PR, CN, RF				5	PLT	PL(A)=0.86MPa		
	73	9				9.40	M	100	84		9.45m: JT, 80-90°, CU, Clay, 1-3mm 9.60m: B, ~50°, PR, Clay, PO, 1-2mm				5.20	PLT	PL(A)=1.1MPa	Sand	
															6	PLT	PL(A)=0.77MPa		
															7	PLT	PL(A)=2.4MPa		
															8	PLT	PL(A)=1.5MPa		
															9	PLT	PL(A)=0.37MPa		

NOTES: [a] Soil origin is "probable" unless otherwise stated.

Generated with CORE-GS by Geroc - Split Soil-Rock Log

PLANT: DTS 700
METHOD: DT to 0.15m, AD/T to 0.70m, NMLC to 12.10m
REMARKS:

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 0.5m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333109.1, N:6256004.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH03
PROJECT No: 86230.01
DATE: 01/04/25
SHEET: 3 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH. (PS, XW, DW [HW, MW, SW], FR)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m) (0.03, 0.06, 0.20, 0.60, >2.00)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	72	11	[CONT] SANDSTONE: grey and pale grey, fine to medium grained, distinct, laminated; siltstone laminations and bedding. Mittagong Formation.		FR		M	100	84						11	PLT	PL(A)=0.92MPa	Sand	
	71							100	100		11.55m: JT, 40°, PR, VNR Clay, RF 11.63m: CS, 30mm					PLT	PL(A)=0.84MPa		
		12									12.06m: JT, 80°, PR, CN, SM				12				
	70		Borehole discontinued at 12.10m depth. Target depth reached.																
		13																	
	69																		
		14																	
	68																		
		15																	
	67																		
		16																	
	66																		
		17																	
	65																		
		18																	
	64																		
		19																	
	63																		

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
METHOD: DT to 0.15m, AD/T to 0.70m, NMLC to 12.10m
REMARKS:

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 0.5m

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333109.1, N:6256004.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH03
PROJECT No: 86230.01
DATE: 01/04/25
SHEET: 1 of 2

0.70-5.00 m depth

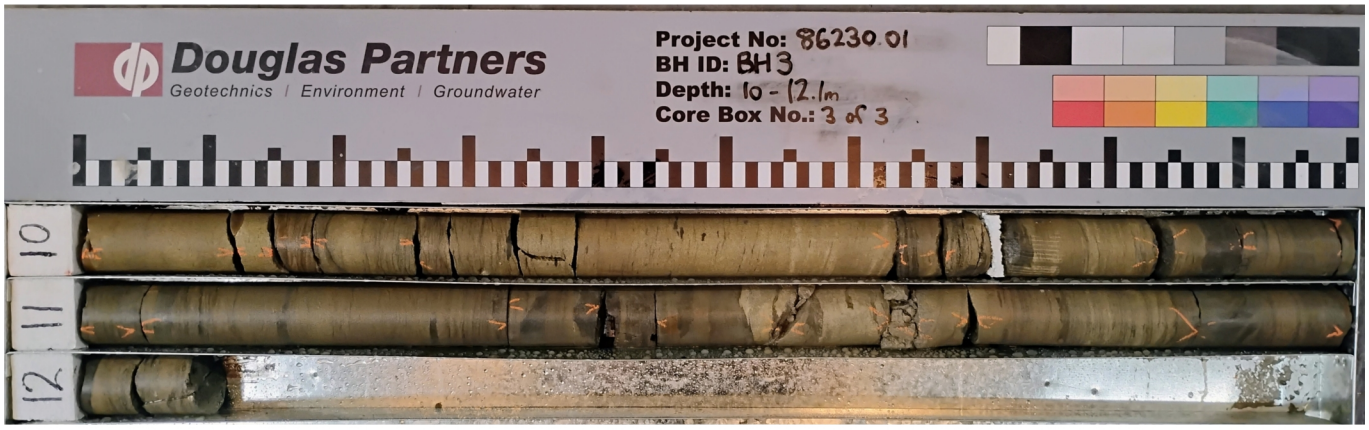
5.00-10.00 m depth

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333109.1, N:6256004.1
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH03
PROJECT No: 86230.01
DATE: 01/04/25
SHEET: 2 of 2



10.00-12.10 m depth

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333129.9, N:6256002.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH04
PROJECT No: 86230.01
DATE: 03/04/25 - 07/04/25
SHEET: 1 of 5

CONDITIONS ENCOUNTERED								SAMPLE				TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] DENSITY.[*]	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
07/04/25 Water level measured at 25.2m BGL.	82	0.15	CONCRETE; 150mm thick; one layer bidirectional reinforcement (SL82).		FILL	NA	NA		D	0.15 - 0.20	0.15		
		0.23	FILL / SAND: grey; medium.		FILL	ND	M		D	0.40 - 0.50	0.20		
		0.60	FILL / Sandy GRAVEL: dark grey; fine to medium, sub-angular, igneous; fine to coarse sand.				M / W				0.40		
		1	Continued as rock log								0.50		
	81	1									1		
		2									2		
	80	2											
		3									3		
	79	3											
		4									4		
	78	4											
		5									5		
	77	5											
		6									6		
	76	6											
		7									7		
	75	7											
		8									8		
	74	8											
		9									9		
	73	9											

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: DTS 700
OPERATOR: Terratest
LOGGED: JDS
METHOD: DT (200mm) to 0.15m, AD/T to 0.60m, NMLC to 31.50m
CASING: HW to 0.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333129.9, N:6256002.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH04
PROJECT No: 86230.01
DATE: 03/04/25 - 07/04/25
SHEET: 2 of 5

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
07/04/25 Water level measured at 25.2m BGL.	82	0	Continued from soil log												0	PLT	PL(A)=1.1MPa		
			SILTSTONE: dark grey, indistinct, bedded. Ashfield Shale.			0.60		100	100							PLT	PL(A)=1.0MPa		
	81	1													1				
		2					H	100	100		1.91m: JT, 50°, PR, CN, SM				2	PLT	PL(A)=1.2MPa		
	80															PLT	PL(A)=0.68MPa		
		3									2.86m: JT, 60°, PR, CN, SM				3	PLT	PL(A)=0.75MPa		
																PLT	PL(A)=1.3MPa		
	79					3.40	M	100	100							PLT	PL(A)=0.56MPa		
		4									3.70m: Water loss 10-20%				4	PLT	PL(A)=0.22MPa		
		4.15	SANDSTONE: grey and pale grey, fine to medium grained, distinct, bedded; siltstone laminae ~5-15%. Mittagong Formation.			4.10	L				4.15m: JT, ~70°, PR, CN, RF								
						4.20					4.20m: Water loss <10%					PLT	PL(A)=0.85MPa		
	78	5						100	100						5				
					FR											PLT	PL(A)=1.2MPa		
		6					H	100	100						6				
	77															PLT	PL(A)=1.7MPa		
		7									6.70m - 8.20m: Water loss 10%				7				
	76					7.50		100	99										
							L				7.60m: JT, 70°, CU, CN, RF								
	75	8				7.90	M				7.66m: B, 0°, PR, RF 7.68m: B, 0°, PR, RF				8	PLT	PL(A)=0.13MPa		
						8.10										PLT	PL(A)=2.2MPa		
	74						H												
		9				9.00		100	87		8.72-8.92m: B, 0-10°, PR, RF, 7x				9				
	73						M				9.00-9.70m: JT, 85°, CU, CN, RF								
						9.90		100	100							PLT	PL(A)=0.73MPa		

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
OPERATOR: Terratest
LOGGED: JDS
METHOD: DT (200mm) to 0.15m, AD/T to 0.60m, NMLC to 31.50m
CASING: HW to 0.5m
REMARKS:

Generated with CORE-GS by Geroc - Split Soil-Rock Log

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333129.9, N:6256002.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH04
PROJECT No: 86230.01
DATE: 03/04/25 - 07/04/25
SHEET: 3 of 5

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH. (PS, XW, DW, HW, MW, SW, FR)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	72	10.00	SANDSTONE: grey, pale grey, and pale brown, fine to medium grained, distinct, bedded; siltstone laminae ~5-15%. Mittagong Formation.					100	100						11	PLT	PL(A)=1.1MPa		
	71	11														PLT	PL(A)=0.99MPa		
	70	12						100	100						12	PLT	PL(A)=0.83MPa		
	69	13					M to H	100	100						13	PLT	PL(A)=0.89MPa		
		13.05	SANDSTONE: pale grey and pale brown, medium to coarse grained; cross-bedded. Hawkesbury Sandstone.								13.81m: B, 5-10°, PR, VNR Clay, RF								
	68	14	From 14.30m: pale grey					100	92						14	PLT	PL(A)=0.80MPa		
	67	15			FR										15	PLT	PL(A)=0.73MPa		
											15.54m: B, 0°, PR, VNR Clay, RF 15.67m: B, 10°, PR, VNR, RF								
	66	16						100	100						16	PLT	PL(A)=1.1MPa		
	65	17				17.00		100	100						17	PLT	PL(A)=1.3MPa		
	64	18					H								18	PLT	PL(A)=1.0MPa		
	63	19						100	100		19.57m: B, 10°, PR, RF, iron clay 19.80m: Water loss ~20%				19	PLT	PL(A)=1.1MPa		
								100	100										

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
OPERATOR: Terratest
LOGGED: JDS
METHOD: DT (200mm) to 0.15m, AD/T to 0.60m, NMLC to 31.50m
CASING: HW to 0.5m
REMARKS:

Generated with CORE-GS by Geroc - Split Soil-Rock Log

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333129.9, N:6256002.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH04
PROJECT No: 86230.01
DATE: 03/04/25 - 07/04/25
SHEET: 4 of 5

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	62	20	[CONT] SANDSTONE: pale grey and pale brown, medium to coarse grained; cross-bedded. Hawkesbury Sandstone.					100	100		20.77m: CS, 10mm				20	PLT	PL(A)=1.0MPa		
	61	21									21.20m: B, ~5°, PR, Clay 2mm, RF				21	PLT	PL(A)=1.3MPa		
											21.40m: Water loss ~10%								
	60	22						100	100						22	PLT	PL(A)=1.1MPa		
	59	23					H	100	100						23	PLT	PL(A)=1.6MPa		
	58	24						100	100						24	PLT	PL(A)=1.5MPa		
	57	25			FR			100	100						25	PLT	PL(A)=1.7MPa		
	56	26				26.50	L	100	92		26.12m: JT, 90°, UN, CN, RF 26.20m: B, 5-10°, PR, Clay, RF, 3-4mm 26.26m: B, 0°, PR, Clay, RF, 1-2mm 26.57m: B, 15°, PR, Clay 1mm, RF 26.70m: B, 0°, PR, Clay 5mm, RF 26.75m: B, 0°, PR, Clay, RF, 1-2mm				26	PLT	PL(A)=0.34MPa		
	55	27				26.90					26.00m - 27.40m: Water loss 25%				27	PLT	PL(A)=0.59MPa		
	54	28					M	100	90		27.75m: CS, 10°, PR, Clay 40mm, RF 28.08m: CS, Clay 15mm 28.20m: JT, 20°, PR, Clay 4mm, RF 28.25m: B, 0°, PR, Clay, RF, 2-4mm				28	PLT	PL(A)=0.32MPa		
	53	29				29.50	M	100	76		28.70m: JT, 15°, PR, Clay 4mm, RF 28.94m: JT, 20°, PR, VNR Clay, RF 29.04-29.30m: B, 5°, PR, VNR, RF 29.36m: JT, 70°, PR, CN, RF 29.40m: JT, 15°, PR, VNR, RF 29.57-29.67m: CZ, 10°, PR 29.82m: JT, 5°, UN, VNR				29	PLT	PL(A)=0.43MPa		
																PLT	PL(A)=0.29MPa		

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
METHOD: DT (200mm) to 0.15m, AD/T to 0.60m, NMLC to 31.50m
REMARKS:

OPERATOR: Terratest

LOGGED: JDS
CASING: HW to 0.5m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333129.9, N:6256002.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH04
PROJECT No: 86230.01
DATE: 03/04/25 - 07/04/25
SHEET: 5 of 5

CONDITIONS ENCOUNTERED													SAMPLE				TESTING			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH. (PS, XW, HW, DW, MW, SW, FR)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m) (0.06, 0.2, 0.6, 2.0, >2.00)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	52	30	[CONT] SANDSTONE: pale grey and pale brown, medium to coarse grained; cross-bedded. Hawkesbury Sandstone.		FR	30.00	H	100	90		Clay, RF, 29.92m: JT, 25°, PR, Clay 6mm, RF 29.98m: JT, 15°, PR, Clay, RF, ~2mm 30.10m: Water loss 25% 30.29m: B, 5°, PR, Clay, RF, 2-4mm 30.34-30.39m: B, ~10°, UN, Clay, RF, 4-6mm 30.45m: B, 15°, UN, Clay, RF, ~2mm 30.48m: B, 10°, PR, Clay, RF, ~3mm				31	PLT	PL(A)=0.95MPa		
	51	31															PLT	PL(A)=1.2MPa		
		32	Borehole discontinued at 31.50m depth.																	
	50	33																		
	49	34																		
	48	35																		
	47	36																		
	46	37																		
	45	38																		
	44	39																		
	43																			

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
OPERATOR: Terratest
LOGGED: JDS
METHOD: DT (200mm) to 0.15m, AD/T to 0.60m, NMLC to 31.50m
CASING: HW to 0.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333129.9, N:6256002.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH04
PROJECT No: 86230.01
DATE: 03/04/25 - 07/04/25
SHEET: 1 of 4

0.60-5.00 m depth

5.00-10.00 m depth

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333129.9, N:6256002.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH04
PROJECT No: 86230.01
DATE: 03/04/25 - 07/04/25
SHEET: 2 of 4

10.00-15.00 m depth

15.00-20.00 m depth

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333129.9, N:6256002.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH04
PROJECT No: 86230.01
DATE: 03/04/25 - 07/04/25
SHEET: 3 of 4

20.00-25.00 m depth

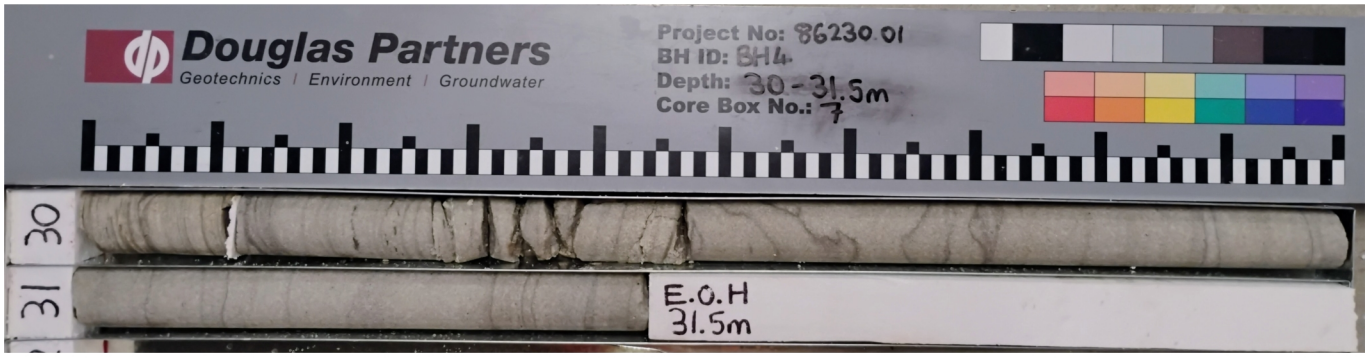
25.00-30.00 m depth

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.4 AHD
COORDINATE: E:333129.9, N:6256002.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH04
PROJECT No: 86230.01
DATE: 03/04/25 - 07/04/25
SHEET: 4 of 4



30.00-31.50 m depth

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.2 AHD
COORDINATE: E:333135.6, N:6255984.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH05
PROJECT No: 86230.01
DATE: 08/04/25
SHEET: 1 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS
08/04/25 No free groundwater observed whilst augering	82	0.15	CONCRETE; 150mm thick; one layer reinforcement 8mm (SL82).			NA	NA		D	0.15 - 0.20	0.15 - 0.20		
		0.25			FILL								
		0.30	FILL / SAND: yellow-grey; medium.						D	0.40 - 0.50	0.40 - 0.50		
			FILL / GRAVEL: grey; fine to medium, sub-angular, igneous.		FILL	ND	M						
	81	1.10	FILL / Sandy CLAY trace gravel: grey; low to medium plasticity; fine sand; fine, angular, siltstone gravel; trace PVC fragments.						D	0.90 - 1.00	0.90 - 1.00		
			Continued as rock log										
	80	2									2		
	79	3									3		
	78	4									4		
	77	5									5		
	76	6									6		
	75	7									7		
	74	8									8		
	73	9									9		

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: DTS 700
OPERATOR: Terratest
LOGGED: JDS
METHOD: DT (200mm) to 0.15m, AD/T to 1.10m, NMLC to 14.60m
CASING: HWT to 1m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.2 AHD
COORDINATE: E:333135.6, N:6255984.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH05
PROJECT No: 86230.01
DATE: 08/04/25
SHEET: 2 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
08/04/25 No free groundwater observed whilst augering	82	1	Continued from soil log			1.10									1				
	81	1.25	SILTSTONE: dark grey, indistinct, bedded. Ashfield Shale.			1.25	M	81	81		1.80m: JT, 70°, PR, VNR M, SM,					PLT	PL(A)=0.77MPa		
		2				2.20	VL				1.90m - 3.00m: Water loss ~10%				2				
	80					2.30	M - H	100	80		2.20-2.30m: CZ, M, fine to medium					PLT	PL(A)=1.5MPa		
		3									2.76m: JT, 50-60°, PR, VNR M, SM					PLT	PL(A)=2.3MPa		
	79										2.83m: JT, 50-60°, PR, VNR M, SM				3				
											2.88m: JT, 50-60°, PR, VNR M, SM					PLT	PL(A)=0.35MPa		
											3.05-3.10m: CZ, M, medium								
						3.43	VL				3.36m: B, PR, M, SM, fine to course					PLT	PL(A)=0.16MPa		
						3.65	L - M	100	60		3.43-3.65m: CZ, M, fine to course					PLT	PL(A)=0.66MPa		
		4				3.90	VL				3.75-3.78m: CZ, M, fine to course gravel				4				
	78					4.00	L - M				4.30m - 5.90m: Water loss <10%					PLT	PL(A)=0.39MPa		
											3.90-4.00m: CZ, 6°, M, fine to medium					PLT	PL(A)=0.13MPa		
		4.75				4.71					4.09m: B, 0°, PR, M, 4mm								
		5	SANDSTONE: grey and pale grey, fine to medium grained, distinct, bedded; with siltstone laminations and bedding ~5%. Mittagong Formation.			4.74		100	86		4.45m: JT, 35°, PR, VNR M, SM				5				
	77										4.53m: B, 0°, PR, M, SM, 1-2mm								
											4.67m: B, PR, M, SM, ~2mm								
											4.71m: B, PR, M, SM, ~2mm					PLT	PL(A)=1.0MPa		
		6									5.90m - 7.50m: Water loss ~10%				6				
	76										4.74m: B, PR, M, SM, ~2mm								
											4.77m: B, PR, M, SM, ~2mm								
											5.33m: B, 5°, PR, SM								
											6.30m: JT, 70°, PR, CN, RF					PLT	PL(A)=0.69MPa		
		7						100	100		6.56m: JT, 70°, PR, CN, RF				7				
	75										6.60m: B, 0°, PR, SM								
											6.82m: JT, 70°, PR, CN, RF								
											6.94m: B, 10°, PR, SM								
							M - H				7.40m: B, 10°, PR, SM					PLT	PL(A)=1.4MPa		
		8						100	100						8				
	74															PLT	PL(A)=1.6MPa		
		9						100	100		9.23m: B, 5°, PR, SM				9	PLT	PL(A)=0.90MPa		
	73																		

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
METHOD: DT (200mm) to 0.15m, AD/T to 1.10m, NMLC to 14.60m
REMARKS:

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 1m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.2 AHD
COORDINATE: E:333135.6, N:6255984.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH05
PROJECT No: 86230.01
DATE: 08/04/25
SHEET: 3 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	72	11	[CONT] SANDSTONE: grey and pale grey, fine to medium grained, distinct, bedded; with siltstone laminations and bedding ~5%. Mittagong Formation.		FR	12.20	M–H	100	100		10.30m: No drilling muds, water loss ~20%				11	PLT	PL(A)=1.9MPa		
	71							100	92		10.55-1059m: CZ, Clay, coating, infill 6mm 10.66m: B, 15°, PR, Clay 10mm, SM					PLT	PL(A)=0.95MPa		
	70	12									11.57m: B, 10°, PR, M, SM				12				
	69	13				13.20	M	100	100						13	PLT	PL(A)=0.40MPa		
	68	14					H	100	95		13.40m: B, 5°, PR, Clay 1mm, SM 13.45m: JT, 80°, ST, CN, RF				14	PLT	PL(A)=1.0MPa		
											14.55m: B, PR, Clay 11mm					PLT	PL(A)=1.1MPa		
	67	15	Borehole discontinued at 14.60m depth. Target depth reached.																
	66	16																	
	65	17																	
	64	18																	
	63	19																	

NOTES: [H] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
METHOD: DT (200mm) to 0.15m, AD/T to 1.10m, NMLC to 14.60m
REMARKS:

OPERATOR: Terratest

LOGGED: JDS
CASING: HWT to 1m

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

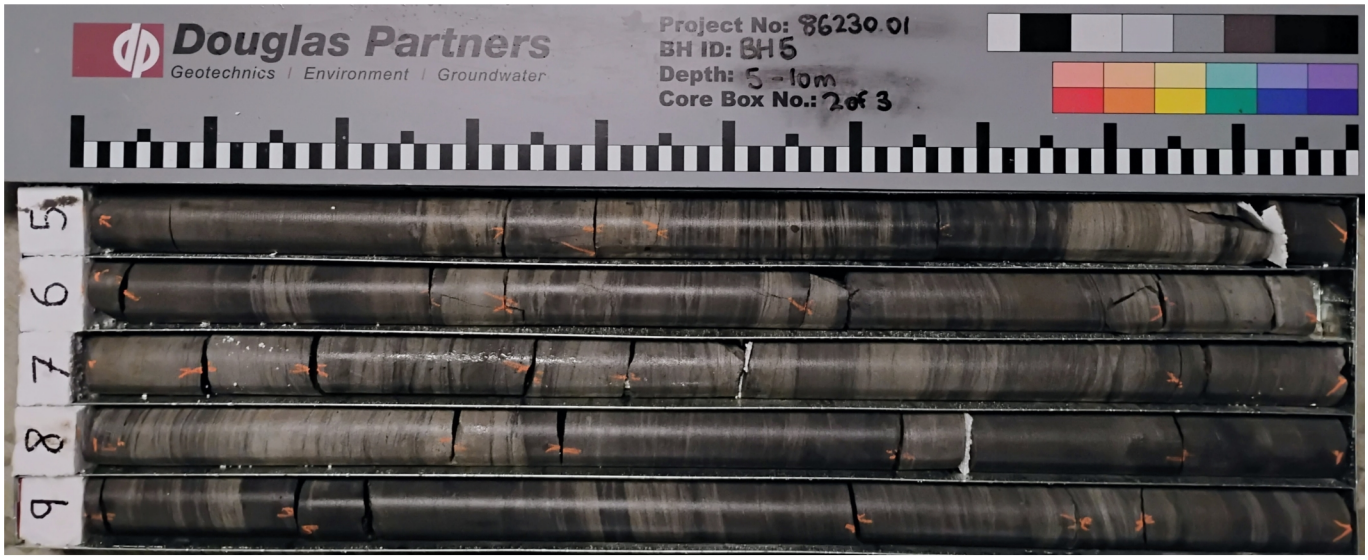
CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.2 AHD
COORDINATE: E:333135.6, N:6255984.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH05
PROJECT No: 86230.01
DATE: 08/04/25
SHEET: 1 of 2

1.10-5.00 m depth



5.00-10.00 m depth

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 82.2 AHD
COORDINATE: E:333135.6, N:6255984.9
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH05
PROJECT No: 86230.01
DATE: 08/04/25
SHEET: 2 of 2

10.00-14.60 m depth

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 81.3 AHD
COORDINATE: E:333122.5, N:6255970.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH06
PROJECT No: 86230.01
DATE: 08/04/25
SHEET: 1 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN[#]	CONSIS.[*] / DENSITY.[*]	MOISTURE	REMARKS	SAMPLE TYPE	SAMPLE INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
08/04/25 No free groundwater observed whilst augering	81	0.15	CONCRETE; 150m thick; one layer reinforcement (SL82).			NA	NA				0.15			Bentonite	
		0.25	FILL / SAND: grey-brown; medium.		FILL	ND	M		D		0.25				
		0.50	FILL / Sandy CLAY with gravel: dark grey; low to medium plasticity; fine to coarse sand; fine, siltstone gravel.		FILL		w=PL		D		0.40				
		0.65	SILTSTONE: dark grey. Ashfield Shale.								0.50				
	80	1	Continued as rock log								1				
		2									2				
	79														
		3									3				
	78														
		4									4				
	77														
		5									5				
	76														
		6									6			Sand	
	75														
		7									7				
	74														
		8									8				
	73														
		9									9				
	72														

NOTES: [#] Soil origin is "probable" unless otherwise stated. [*] Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: DTS 700
OPERATOR: Terratest
LOGGED: JDS
METHOD: DT (200mm) to 0.15m, AD/T to 0.50m, WB to 0.65m, NMLC to 11.05m
CASING: HWT to 0.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Douglas PARTNERS

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 81.3 AHD
COORDINATE: E:333122.5, N:6255970.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH06
PROJECT No: 86230.01
DATE: 08/04/25
SHEET: 2 of 3

GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
08/04/25 No free groundwater observed whilst augering	81	0	Continued from soil log												0	PLT	PL(A)=0.94MPa	Bentonite	
	80	1	SILTSTONE: dark grey, indistinct, bedded. Ashfield Shale.			0.65		100	76		0.85m: B, 0°, PR, 1mm, SM, fines 1.15m: JT, 30°, PR, VNR, SM, fines 1.33m: JT, 30°, PR, VNR, SM, fines 1.35m: JT, 70°, PR, CN, SM 1.42m: CZ, 40mm 1.70m: Water loss <10%. no drilling mud added.				1	PLT	PL(A)=1.8MPa		
	79	2					M	100	100						2	PLT	PL(A)=0.72MPa		
	78	3						100	95		3.00m: CZ, 40mm 3.75m: CZ, 20mm 3.98m: CZ, 20mm				3	PLT	PL(A)=0.95MPa PL(A)=0.80MPa PL(A)=0.75MPa		
	77	4 4.05	SANDSTONE: grey and pale grey, fine to medium grained, indistinct, bedded; siltstone laminations and bedding. Mittagong Formation.		FR	4.50		100	100						4	PLT	PL(A)=0.88MPa PL(A)=0.70MPa		
	76	5						100	100						5	PLT	PL(A)=0.93MPa		
	75	6						100	93		6.21m: CZ, 20mm 6.31m: CZ, 20mm				6	PLT	PL(A)=1.0MPa PL(A)=2.0MPa	Sand	
	74	7					H	100	100						7	PLT	PL(A)=2.3MPa		
	73	8						100	91						8	PLT	PL(A)=1.4MPa		
	72	9													9	PLT	PL(A)=1.5MPa		

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
OPERATOR: Terratest
LOGGED: JDS
METHOD: DT (200mm) to 0.15m, AD/T to 0.50m, WB to 0.65m, NMLC to 11.05m
CASING: HWT to 0.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

BOREHOLE LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 81.3 AHD
COORDINATE: E:333122.5, N:6255970.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH06
PROJECT No: 86230.01
DATE: 08/04/25
SHEET: 3 of 3

CONDITIONS ENCOUNTERED														SAMPLE				TESTING			
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	WEATH. (PS, XW, DW, HW, MW, SW, FR)	DEPTH (m)	STRENGTH (VL, L, M, H, VH, EH)	RECOVERY (%)	RQD	FRACTURE SPACING (m)	DEFECTS & REMARKS	SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
	71	11	[CONT] SANDSTONE: grey and pale grey, fine to medium grained, indistinct, bedded; siltstone laminations and bedding. Mittagong Formation.		FR		H	100	91		9.97m: CZ, 80mm 10.10m: B, 10°, PR, Clay 10mm, RF				11	PLT	PL(A)=1.3MPa	Sand	
	70	12	Borehole discontinued at 11.05m depth. Target depth reached.					100	100										
	69	13																	
	68	14																	
	67	15																	
	66	16																	
	65	17																	
	64	18																	
	63	19																	
	62																		

NOTES: [a] Soil origin is "probable" unless otherwise stated.

PLANT: DTS 700
OPERATOR: Terratest
LOGGED: JDS
METHOD: DT (200mm) to 0.15m, AD/T to 0.50m, WB to 0.65m, NMLC to 11.05m
CASING: HWT to 0.5m
REMARKS:

Refer to explanatory notes for symbol and abbreviation definitions

Generated with CORE-GS by Geroc - Split Soil-Rock Log

CORE PHOTO LOG

CLIENT: Stockland Commercial Property
PROJECT: Proposed Commencial Building
LOCATION: 601 Pacific Highway, St Leonards, NSW 2065

SURFACE LEVEL: 81.3 AHD
COORDINATE: E:333122.5, N:6255970.7
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH06
PROJECT No: 86230.01
DATE: 08/04/25
SHEET: 1 of 1

0.50-5.00 m depth

5.00-11.05 m depth

Douglas PARTNERS

Groundwater (GW) Field Sheet

Project and Bore Installation Details						
Project Name / Site Location					Project Number	86230.01
Well Construction Details	Well ID	BH01	Drilling Method		Hole Diameter (m)	
	Well Depth (m bgl)	14.8	Screened (m bgl)	3.1	Stick Up (m)	
Survey Information	Easting	333081.1	Northing	6255981.1	Elevation RL	82.4 AHD
GW Level During Drilling		m bgl				
Contaminants/Comments						

Well Development Details					
Date / Time / Weather Conditions	10/4/25			Purged By	JDS
Purge Method / Equipment	Twister pump.				
Product observed / Thickness	—	mm	Confirmed with Bailer? (Y / (N))		
GW Level (pre-purge)	11.0	m bgl	Observed Well Depth	14.6	m bgl
Height of Water Column (H)	3.6	m bgl	Estimated Bore Volume*	~10L	L
GW Level (post-purge)	N/A	m bgl	Total Volume Purged**	N/A	L
Appearance/Comments	permeability test carried out.				

Sampling Details					
Date / Time / Weather Conditions	17/4/25 2:45 pm Sunny			Sampled By	ZW
Sampling Method / Equipment	Bladder Pump + HDPE, interface Probe				
WQM Model	YSI		WQM Calibration Date	17/4/25	
Product observed / Thickness	—	mm	Confirmed with Bailer? (Y / (N))	N	
GW Level (pre-micropurge)	10.83	m bgl	Observed Well Depth	14.63	m bgl
Height of Water Column	3.8	m bgl	Estimated Bore Volume*	~10.64	L
GW Level (post sample)	11.67	m bgl	Total Volume of Micro-Purged	~2.5	L

Water Quality Parameters

Time	Cumulative Volume (L)	Temp (°C)	DO (mg/L)#	EC (µS or mS/cm)	pH	Redox (mV)	Turbidity^
Stabilisation Target (3 readings)		0.2	+/- 10%	+/- 5%	+/- 0.1	+/- 10 mV	+/- 10%
		21.5	3.01	1090	5.20	109	350
		21.1	2.21	~~EE~~ 1152	5.13	113	364
		20.8	1.81	1222	5.07	117.0	360
		20.6	1.71	1244	5.07	111.8	386
		20.4	1.34	1261	5.08	119.8	371
		20.4	1.29	1269	5.07	120.5	354
		20.4	1.26	1290	5.07	122.1	335

Notes: # Considered stabilised if three DO values are less than 0.5 mg/L ^ Considered stabilised if three Turbidity values are less than 5 NTU

Sample Details						
Sampling Depth (rationale)	12	m bgl,	mid WC			
Sample Observations (e.g. colour, sediment, sheen, odour)	P. brown, slightly silty, no sheen or odour.					
Sample ID	BH01					
QAQC Samples	Replicate		Triplicate		Other	
Sample Containers Quantity / Preservation / Filtration	Amber glass		Plastic		PFAS (no teflon)	
	Metals (F/UF) (HNO3)		Phenols/COD/NH3 (H2SO4)		Vials (HCl)	
	Ferrous/Ferric Iron (HCl)		Cyanides/Chromium (NaOH)		Other	
Comments						

*Estimated Well Volume = H * F	Std. Drilling Diameter	NMLC (0.075)	HQ (0.096)	PQ (0.1226)	SFA (0.125)	HFA (0.194)
**Purge Target: min. 3 well volumes	Factor (F):	2.8	3.7	5.2	5.4	11.1

Douglas PARTNERS

Groundwater (GW) Field Sheet

Project and Bore Installation Details						
Project Name / Site Location					Project Number	86230.01
Well Construction Details	Well ID	BH03	Drilling Method		Hole Diameter (m)~	
	Well Depth (m bgl)	12.1	Screened (m bgl)	0.7	Stick Up (m)	
Survey Information	Easting	333109.1	Northing	6256004.1	Elevation RL	82.4
GW Level During Drilling		m bgl				
Contaminants/Comments						

Well Development Details					
Date / Time / Weather Conditions	10/4/25			Purged By	JDS
Purge Method / Equipment	Twister pump				
Product observed / Thickness	—	mm	Confirmed with Bailer? (Y / (N))		
GW Level (pre-purge)	9.0	m bgl	Observed Well Depth	11.0	m bgl
Height of Water Column (H)	2.0	m bgl	Estimated Bore Volume*	~ 5.6	L
GW Level (post-purge)	N/A	m bgl	Total Volume Purged**	N/A	L
Appearance/Comments	Permeability test carried out				

Sampling Details					
Date / Time / Weather Conditions	17/4/25, 1:40 pm, Overcast.			Sampled By	ZW
Sampling Method / Equipment	Bladder Pump + HDPE, Interface probe				
WQM Model	YSI		WQM Calibration Date	17/4/25	
Product observed / Thickness	—	mm	Confirmed with Bailer? (Y / (N))	N	
GW Level (pre-micropurge)	6.73	m bgl	Observed Well Depth	10.92	m bgl
Height of Water Column	4.19	m bgl	Estimated Bore Volume*	~ 11.7	L
GW Level (post sample)	7.02	m bgl	Total Volume of Micro-Purged	~ 2.5	L

Water Quality Parameters

Time	Cumulative Volume (L)	Temp (°C)	DO (mg/L)#	EC (µS or mS/cm)	pH	Redox (mV)	Turbidity^
Stabilisation Target (3 readings)		0.2	+/- 10%	+/- 5%	+/- 0.1	+/- 10 mV	+/- 10%
		21.4	2.81	552	6.37	4.0	220
		21.1	2.31	526	6.34	-2.5	223
		21.0	1.95	528	6.32	-10.3	192
		21.0	1.32	530	6.31	-20.1	159
		20.9	1.27	530	6.3	-27.2	146
		20.9	1.1	530	6.29	-29.8	141
		20.9	1.07	530	6.29	-31.5	129

Notes: # Considered stabilised if three DO values are less than 0.5 mg/L; ^ Considered stabilised if three Turbidity values are less than 5 NTU

Sample Details						
Sampling Depth (rationale)	9	m bgl,	mid WC / screen			
Sample Observations (e.g. colour, sediment, sheen, odour)	p. grey, slightly silty, no sheen or odour					
Sample ID	BH03					
QAQC Samples	Replicate		Triplicate		Other	
Sample Containers Quantity / Preservation / Filtration	Amber glass		Plastic		PFAS (no teflon)	
	Metals (F/UF) (HNO3)		Phenols/COD/NH3 (H2SO4)		Vials (HCl)	
	Ferrous/Ferric Iron (HCl)		Cyanides/Chromium (NaOH)		Other	
Comments						

*Estimated Well Volume = H * F	Std. Drilling Diameter	NMLC (0.075)	HQ (0.096)	PQ (0.1226)	SFA (0.125)	HFA (0.194)
**Purge Target: min. 3 well volumes	Factor (F):	2.8	3.7	5.2	5.4	11.1

Groundwater (GW) Field Sheet

Project and Bore Installation Details						
Project Name / Site Location					Project Number	86230.01
Well Construction Details	Well ID	BH06	Drilling Method		Hole Diameter (m)	
	Well Depth (m bgl)		Screened (m bgl)	2.0	Stick Up (m)	
Survey Information	Easting	333122.5	Northing	6255970.7	Elevation RL	81.3
GW Level During Drilling		m bgl				
Contaminants/Comments						

Well Development Details					
Date / Time / Weather Conditions	10/4/25			Purged By	JDS
Purge Method / Equipment	Twister pump				
Product observed / Thickness	—	mm	Confirmed with Bailer? (Y / N)		
GW Level (pre-purge)	3.7	m bgl	Observed Well Depth	10.9	m bgl
Height of Water Column (H)	7.2	m bgl	Estimated Bore Volume*	~20L	L
GW Level (post-purge)	10.5	m bgl	Total Volume Purged**	~20	L
Appearance/Comments	drained with twister pump.				

Sampling Details						
Date / Time / Weather Conditions	17/4/25, 12:45 pm, Overcast			Sampled By	ZW	
Sampling Method / Equipment	Bladder pump TYGON, Interface probe					
WQM Model	YSI		WQM Calibration Date	17/4/25		
Product observed / Thickness	—	mm	Confirmed with Bailer? (Y / N)	N		
GW Level (pre-micropurge)	3.4	m bgl	Observed Well Depth	10.85	m bgl	
Height of Water Column	7.45	m bgl	Estimated Bore Volume*	~20	L	
GW Level (post sample)	4.12	m bgl	Total Volume of Micro-Purged	~2.5	L	

Water Quality Parameters

Time	Cumulative Volume (L)	Temp (°C)	DO (mg/L)#	EC (µS or mS/cm)	pH	Redox (mV)	Turbidity^
Stabilisation Target (3 readings)		0.2	+/- 10%	+/- 5%	+/- 0.1	+/- 10 mV	+/- 10%
	0.5	21.5	4.0	623	5.65	129	310
	0.75	21.1	3.02	619	5.66	124.6	323
	1	21.1	2.84	618	5.66	121.3	348
	1.25	21.1	2.60	620	5.66	119.5	342
	2	21.1	2.48	620	5.65	118.5	334
Notes:	# Considered stabilised if three DO values are less than 0.5 mg/L			^ Considered stabilised if three Turbidity values are less than 5 NTU			

Sample Details							
Sampling Depth (rationale)	8	m bgl,	mid WC / Screen				
Sample Observations (e.g. colour, sediment, sheen, odour)	P. brown, slightly silty, no sheen, no odour.						
Sample ID	BH06						
QAQC Samples	Replicate	BD1/250417	Triplicate		Other		
Sample Containers Quantity / Preservation / Filtration	Amber glass		Plastic		PFAS (no teflon)		
	Metals (F/UF) (HNO3)		Phenols/COD/NH3 (H2SO4)		Vials (HCl)		
	Ferrous/Ferric Iron (HCl)		Cyanides/Chromium (NaOH)		Other		
Comments							

*Estimated Well Volume = H * F	Std. Drilling Diameter	NMLC (0.075)	HQ (0.096)	PQ (0.1226)	SFA (0.125)	HFA (0.194)
**Purge Target: min. 3 well volumes	Factor (F):	2.8	3.7	5.2	5.4	11.1

Appendix D

Data Quality Objectives

1. Data quality objectives

The contamination testing has been devised broadly in accordance with the seven-step data quality objectives (DQO) process which is provided in Appendix B, Schedule B2 of NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013).

Table 1: Data quality objectives

Step	Summary
1: State the problem	The objective of the report on opportunistic contamination testing was to present the results of sampling and testing of soil and groundwater against applicable assessment criteria. The report was prepared for due diligence purposes. The project team consist of experienced environmental engineers and scientists working in the roles of Project Principal, Project Reviewer, Project Manager and field staff.
2: Identify the decisions / goal of the study	The site assessment criteria (SAC) for each of the CoPC are detailed in Appendix F. The decision is to establish whether or not the results fall below the SAC. This is only an indicative due diligence assessment and no analysis into the site's suitability has been derived.
3: Identify the information inputs	Inputs will be the analytical results for the CoPC and media from NATA accredited laboratories and methods, where possible. The SAC for each of the CoPC are detailed in Appendix F. Field results and observations such as observations of building debris, ash, odours, staining etc will be used to inform sample selection for laboratory analysis.
4: Define the study boundaries	The lateral boundaries of the investigation area are shown on Drawing 1, Appendix A. The vertical boundaries are to the depth of the boreholes. The assessment is limited to the timeframe over which the field works were undertaken.
5: Develop the analytical approach (or decision rule)	The decision rule is to compare all analytical results with the SAC (Appendix F, based on NEPC (2013)). Where guideline values are absent, other sources of guideline values accepted by NEPC (2013) shall be adopted where available and warranted. Where a sample result exceeds the adopted criterion, a further qualitative site-specific assessment will be made as to the risk posed by the presence of that contaminant(s). Initial comparisons will be with individual results then, where appropriate, summary statistics (including mean, standard deviation and 95% upper confidence limit (UCL) of the arithmetic mean (95% UCL)) to further assess potential risks posed by the site contamination. Quality control results are to be assessed according to their relative percent difference (RPD) values. For field duplicates and laboratory results, RPD values should generally be below 30%; for field blanks results should be at or less than the limits of reporting (NEPC, 2013). The field and laboratory quality assurance assessment are included in Appendix E.

Step	Summary
6: Specify the performance or acceptance criteria	Baseline condition: Contaminants at the site and/or statistical analysis of data (in line with NEPC (2013)) exceed the human health and environmental SAC and pose a potentially unacceptable risk to receptors (null hypothesis). Alternative condition: Contaminants at the site and statistical analysis of data (in line with NEPC (2013)) comply with the human health and environmental SAC and therefore, do not pose a potentially unacceptable risk to receptors (alternative hypothesis). Unless conclusive information from the collected data is sufficient to reject the null hypothesis, it will be assumed that the baseline condition is true.
7: Optimise the design for obtaining data	The design was not optimised and was based only on opportunistic sampling and testing. Further details regarding the sampling plan are in Section 5.

2. References

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]*. Australian Government Publishing Services Canberra: National Environment Protection Council.

Appendix E

Analytical Results Tables

Table E1: Summary of Laboratory Results – Priority metals, Priority PAH, Priority TRH, BTEX

			Priority metals								Priority PAH				Priority TRH						BTEX			
			Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Naphthalene [b]	Benzo(a)pyrene (B(a)P)	Benzo(a)pyrene TEQ (B(a)P TEQ)	Total PAH	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	Total Xylenes
		PQL	4	0.4	1	1	1	0.1	1	1	1	0.05	0.5	0.05	25	50	25	50	100	100	0.2	0.5	1	1
Sample ID	Depth	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH01	0.5 - 0.6 m	25/03/25	**6**	**0.9**	**6**	**41**	**18**	<0.1	**45**	**370**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BD1/20250325	0 m	25/03/25	**5**	**0.6**	**7**	**41**	**15**	<0.1	**51**	**260**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BH01	1.4 - 1.5 m	25/03/25	**11**	**0.5**	**4**	**37**	**20**	<0.1	**55**	**260**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	NL -	- -	4 -	400 -	- -	- -	70 -	240 -	- -	- -	0.5 -	220 -	NL -	60 -
BH02	0.13 - 0.2 m	25/03/25	<4	<0.4	**4**	**15**	**3**	<0.1	**27**	**18**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BH02	0.4 - 0.5 m	25/03/25	<4	<0.4	**5**	**24**	**2**	<0.1	**62**	**27**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BH03	0.4 - 0.5 m	25/03/25	**11**	<0.4	**9**	**38**	**22**	<0.1	**36**	**190**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	**120**	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BH04	0.4 - 0.5 m	25/03/25	**4**	<0.4	**13**	**40**	**11**	<0.1	**47**	**130**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BH05	0.15 - 0.2 m	25/03/25	<4	<0.4	**2**	**5**	**2**	<0.1	**1**	**3**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BH05	0.4 - 0.5 m	25/03/25	<4	<0.4	**9**	**27**	**16**	<0.1	**25**	**78**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BH05	0.9 - 1 m	25/03/25	**5**	<0.4	**8**	**41**	**22**	<0.1	**28**	**110**	<1	<0.05	<0.5	<0.05	<25	**56**	<25	**56**	**130**	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BH05-FC	1.1 m	25/03/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH06	0.4 - 0.5 m	25/03/25	**170**	<0.4	**6**	**25**	**30**	**0.2**	**63**	**62**	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	3 -	- -	4 -	400 -	- -	- -	45 -	110 -	- -	- -	0.5 -	160 -	55 -	40 -
BH02 - [TRIPLICATE]	0.4 - 0.5 m	25/03/25	<4	<0.4	**5**	**46**	**4**	<0.1	**59**	**49**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
BH06 - [TRIPLICATE]	0.4 - 0.5 m	25/03/25	**100**	<0.4	**6**	**23**	**17**	**0.1**	**45**	**60**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			500 -	150 -	500 -	30,000 -	1,200 -	120 -	1,200 -	60,000 -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -

Lab result

HIL/HSL value EIL/ESL/EGV value

HIL/HSL exceedance EIL/ESL exceedance HIL/HSL and EIL/ESL exceedance ML exceedance ML and HIL/HSL or EIL/ESL exceedance

Indicates that asbestos has been detected by the lab, refer to the lab report **Blue** = DC exceedance **Red** = EGV-indirect exceedance HSL 0-<1 Exceedance

Bold = Lab detections - = Not tested or No HIL/HSL/EIL/ESL (as applicable) or Not applicable NL = Not limiting NAD = No Asbestos detected

HIL = Health investigation level HSL = Health screening level (excluding DC) EIL = Ecological investigation level ESL = Ecological screening level EGV = Environmental Guideline Value ML = Management Limit DC = Direct Contact HSL

Notes:

a QA/QC replicate of sample listed directly below the primary sample

b Naphthalene reported as highest detection from the BTEXN or PAH suite, or if both results <PQL as lowest PQL

c EIL criteria applies to DDT only

Site Assessment Criteria (SAC):

SAC based on generic land use thresholds for Residential B with minimal opportunities for soil access

Refer to the SAC section of report for information of SAC sources and rationale. Summary information as follows:

HIL	HIL-B (NEPC, 2013 or HEPA, 2025 (PFAS only))	ML	Residential, Parkland and Public Open Space (NEPC, 2013)
HSL (vapour intrusion)	HSL-A/B (NEPC, 2013)		
DC	Direct contact HSL B Residential (High density) (CRC CARE, 2011)		

Table E2: Summary of Laboratory Results – Metals, TRH, BTEX, PAH, OCP, OPP, PCB, VOC (excluding BTEX), Nutrients, Anions & Cations

		Metals								Metals - Dissolved								TRH				BTEX					
		Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	o-Xylene	m+p-Xylene	Total Xylenes
	PQL	1	0.1	1	1	1	0.05	1	1	1	0.1	1	1	1	0.05	1	1	10	50	100	100	1	1	1	1	2	1
ANZG (2018) 95% LOP Fresh		13	0.2	1	1.4	3.4	**0.06**	11	8	13	0.2	1	1.4	3.4	**0.06**	11	8					950	180	80	350	75	
NEPC (2013) HSL 2-4m																		1000	1000			800	NL	NL			NL
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH01	17/04/25	**3**	<0.1	<1	**13**	**2**	<0.05	**130**	**270**	<1	<0.1	<1	**3**	<1	<0.05	**100**	**120**	<10	<50	<100	<100	<1	<1	<1	<1	<2	<1
BH03	17/04/25	**6**	<0.1	**2**	**24**	**2**	<0.05	**22**	**59**	**2**	<0.1	<1	<1	<1	<0.05	**17**	**28**	**30**	<50	<100	<100	<1	<1	<1	<1	<2	<1
BH06	17/04/25	**5**	<0.1	**9**	**36**	**8**	<0.05	**28**	**110**	<1	<0.1	<1	**3**	<1	<0.05	**15**	**41**	<10	<50	<100	<100	<1	<1	<1	<1	<2	<1
BD1/250417	17/04/25	**6**	<0.1	**11**	**33**	**10**	<0.05	**33**	**100**	-	-	-	-	-	-	-	-	<10	<50	<100	<100	<1	<1	<1	<1	<2	<1

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Table E2: Summary of Laboratory Results – Metals, TRH, BTEX, PAH, OCP, OPP, PCB, VOC (excluding BTEX), Nutrients, Anions & Cations

		PAH																									
		Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Naphthalene	Benzo(a)pyrene (BaP)	Benzo(b+j+k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Sum of detected PAH	DDE	DDT	DDD	Aldrin	Dieldrin	Aldrin + Dieldrin (calculated)	alpha-chlordane	gamma-Chlordane	Endosulfan I	Endosulfan II
	PQL	0.1	0.1	0.1	0.1	1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ANZG (2018) 95% LOP Fresh				**0.01**		16	**0.1**					**1**			**0.6**				**0.006**		**<u>0.001</u>**	**<u>0.01</u>**					
NEPC (2013) HSL 2-4m						NL																					
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH01	17/04/25	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH03	17/04/25	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH06	17/04/25	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BD1/250417	17/04/25	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Notes:

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ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E2: Summary of Laboratory Results – Metals, TRH, BTEX, PAH, OCP, OPP, PCB, VOC (excluding BTEX), Nutrients, Anions & Cations

		OCP													OPP																	
		Endosulfan Sulphate	Endrin	Endrin Aldehyde	Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Methoxychlor	Mirex	alpha-BHC	beta-BHC	delta-BHC	Lindane	Sum of detected OCP	Azinphos methyl (Guthion)	Bromophos-ethyl	Chlorpyriphos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Ronnel (fenchlorphos)	Fenitrothion	Fenthion	Malathion	Parathion	Parathion-methyl	Methidathion	Fenamiphos	Sum of detected OPP
	PQL	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	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ANZG (2018) 95% LOP Fresh			**0.01**		**0.01**		0.1	**0.005**	**0.04**				0.2		0.02		**0.00004**		0.01		0.15			0.2		0.05	0.004				
NEPC (2013) HSL 2-4m																																
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH01	17/04/25	<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	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH03	17/04/25	<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	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH06	17/04/25	<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	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BD1/250417	17/04/25	<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	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Notes:

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		PCB																																
		Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arocolor 1260	Sum of detected PCB	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	tetrachloroethene	1,1,2-trichloroethane	1,1,2-trichloroethylene	1,1-dichloroethane	1,1-Dichloroethene	1,2-dichloropropane	1,2,3-trichlorobenzene	1,2,3-trichloropropane	1,2,4-trichlorobenzene	1,2,4-trimethyl benzene	1,2-dibromo-3-chloropropane	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane	1,3,5-trimethyl benzene	1,3-dichlorobenzene	1,3-dichloropropane	1,4-dichlorobenzene	2,2-dichloropropane	2-chlorotoluene
	PQL	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ANZG (2018) 95% LOP Fresh					**0.3**		**0.01**				270	400	70	6,500	330		700		**3**		**85**			160	1,900	900		260	1,100	60		
NEPC (2013) HSL 2-4m																																		
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH01	17/04/25	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH03	17/04/25	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BH06	17/04/25	<2	<2	<2	<2	<2	<2	<2	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
BD1/250417	17/04/25	<2	<2	<2	<2	<2	<2	<2	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E2: Summary of Laboratory Results – Metals, TRH, BTEX, PAH, OCP, OPP, PCB, VOC (excluding BTEX), Nutrients, Anions & Cations

		VOC (excluding BTEX)																															
		4-chlorotoluene	4-isopropyl toluene	Bromobenzene	Bromochloromethane	Bromodichloroethane	Bromoform	carbon tetrachloride	Chloroethane	Vinyl Chloride	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Isopropylbenzene (cumene)	Cyclohexane	dibromochloroethane	Dibromomethane	Dichlorodifluoromethane	1,2-dibromoethane	hexachlorobutadiene	Bromomethane	Monochlorobenzene	n-butyl benzene	n-propyl benzene	sec-butyl benzene	Styrene (vinylbenzene)	Tert-butyl benzene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichlorofluoromethane	Sum of detected VOC
	PQL	1	1	1	1	1	1	1	10	10	1	10	1	1	1	1	1	1	10	1	1	10	1	1	1	1	1	1	1	1	10	1
ANZG (2018) 95% LOP Fresh								240		100	770				30								55										
NEPC (2013) HSL 2-4m																																	
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH01	17/04/25	<1	<1	<1	<1	<1	<1	<1	<10	<10	**3**	<10	<1	<1	<1	<1	<1	<1	<10	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	**3**
BH03	17/04/25	<1	<1	<1	<1	**5**	<1	<1	<10	<10	**32**	<10	<1	<1	<1	<1	<1	**1**	<1	<10	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	**38**
BH06	17/04/25	<1	<1	<1	<1	<1	<1	<1	<10	<10	<1	<10	<1	<1	<1	<1	<1	<1	<10	<1	<1	<10	<1	<1	<1	<1	<1	<1	<1	<1	<10	<1
BD1/250417	17/04/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- No criterion / not defined / not tested / not applicable
- * QA/QC replicate of sample listed directly below the primary sample
- NL Not limiting
- PQL Practical quantitation limit

Shaded cell is exceedance of guideline value

Where one or more guideline value is exceeded, the cell is shaded to the colour of the highest guideline value exceeded

NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013), health screening level Sand 2-4m

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 95% level of protection of species for Fresh aquatic ecosystems [NB: 99% level of protection adopted for bioaccumulative chemicals]

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, orange text is 'unknown' level of protection

Underlining of ANZG (2018) criteria indicates a criteria with an 'unknown' level of protection.

ANZG (2018) DGV adopted for most conservative species of following analytes: DGV for xylene (m) adopted for xylene (m+p); DGV for CrVI adopted for total chromium; DGV for AsV adopted for total arsenic

ANZG (2018) DGV adopted for aluminium in freshwater is for receiving waters with pH >6.5. For receiving waters with pH <6.5 suitability of the more conservative, low reliability DGV of unknown LOP should be considered

ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E2: Summary of Laboratory Results – Metals, TRH, BTEX, PAH, OCP, OPP, PCB, VOC (excluding BTEX), Nutrients, Anions & Cations

		Nutrients								Anions & Cations	
		Nitrogen	Ammonia as N	TKN in water	Nitrate as N	Nitrite as N	NOx as N	Organic Nitrogen as N	Phosphorous	Chloride	Sulphate
	PQL	100	5	100	5	5	5	200	50	1000	1000
ANZG (2018) 95% LOP Fresh			900		1,100						
NEPC (2013) HSL 2-4m											
Sample ID	Sample Date	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BH01	17/04/25	**100**	**12**	**100**	<5	<5	<5	<200	<50	**250,000**	**120,000**
BH03	17/04/25	**300**	<5	**300**	<5	<5	<5	**300**	**60**	**56,000**	**55,000**
BH06	17/04/25	**100**	**12**	**100**	<5	<5	<5	<200	**2,900**	**66,000**	**71,000**
BD1/250417	17/04/25	-	-	-	-	-	-	-	-	-	-

Notes:

-	No criterion / not defined / not tested / not applicable
*	QA/QC replicate of sample listed directly below the primary sample
NL	Not limiting
PQL	Practical quantitation limit
	Shaded cell is exceedance of guideline value
	Where one or more guideline value is exceeded, the cell is shaded to the colour of the highest guideline value exceeded
	NEPC (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013), health screening level Sand 2-4m
	ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 95% level of protection of species for Fresh aquatic ecosystems [NB: 99% level of protection adopted for bioaccumulative chemicals]
	ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, orange text is 'unknown' level of protection
	Underlining of ANZG (2018) criteria indicates a criteria with an 'unknown' level of protection.
	ANZG (2018) DGV adopted for most conservative species of following analytes: DGV for xylene (m) adopted for xylene (m+p); DGV for CrVI adopted for total chromium; DGV for AsV adopted for total arsenic
	ANZG (2018) DGV adopted for aluminium in freshwater is for receiving waters with pH >6.5. For receiving waters with pH <6.5 suitability of the more conservative, low reliability DGV of unknown LOP should be considered
	ANZG (2018) Ammonia DGV is pH and temperature dependant. DGV for a pH of 8 provided in table.

Table E3: Summary of Laboratory Results – Waste Classification

			Metals								TRH		BTEX				PAH		Phenols	OCP				
			Total Arsenic	TCLP Total Arsenic	Cadmium	Total Chromium	Lead	Mercury (inorganic)	Nickel	TCLP Nickel	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Benzo(a)pyrene (B(a)P)	Total PAH	Total Phenolics	Scheduled Chemical Waste (standard)	Chlordane	Total Endosulfan	Total Analysed OCP	Mirex
		PQL	4	0.05	0.4	1	1	0.1	1	0.02	25	50	0.2	0.5	1	1	0.05	0.05	5	0.1	0.1	0.1	0.1	0.1
Sample ID	Depth	Sample Date	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BH01	0.5 - 0.6 m	25/03/25	**6**	-	**0.9**	**6**	**18**	<0.1	**45**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1
BD1/20250325	0 m	25/03/25	**5**	-	**0.6**	**7**	**15**	<0.1	**51**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-
BH01	1.4 - 1.5 m	25/03/25	**11**	-	**0.5**	**4**	**20**	<0.1	**55**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-
BH02	0.13 - 0.2 m	25/03/25	<4	-	<0.4	**4**	**3**	<0.1	**27**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-
BH02	0.4 - 0.5 m	25/03/25	<4	-	<0.4	**5**	**2**	<0.1	**62**	**0.07**	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1
BH03	0.4 - 0.5 m	25/03/25	**11**	-	<0.4	**9**	**22**	<0.1	**36**	-	<25	**110**	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1
BH04	0.4 - 0.5 m	25/03/25	**4**	-	<0.4	**13**	**11**	<0.1	**47**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1
BH05	0.15 - 0.2 m	25/03/25	<4	-	<0.4	**2**	**2**	<0.1	**1**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-
BH05	0.4 - 0.5 m	25/03/25	<4	-	<0.4	**9**	**16**	<0.1	**25**	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1
BH05	0.9 - 1 m	25/03/25	**5**	-	<0.4	**8**	**22**	<0.1	**28**	-	<25	**140**	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-
BH05-FC	1.1 m	25/03/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06	0.4 - 0.5 m	25/03/25	**170**	<0.05	<0.4	**6**	**30**	**0.2**	**63**	**0.2**	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1
BH02 - [TRIPLICATE]	0.4 - 0.5 m	25/03/25	<4	-	<0.4	**5**	**4**	<0.1	**59**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06 - [TRIPLICATE]	0.4 - 0.5 m	25/03/25	**100**	-	<0.4	**6**	**17**	**0.1**	**45**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summary Statistics																								
Min			4	0.05	0.4	2	2	0.1	1	0.07	25	50	0.2	0.5	1	1	0.05	0.05	5	0.1	0.1	0.1	0.1	0.1
Max			170	0.05	0.9	13	30	0.2	63	0.2	25	140	88	87	88	177	0.05	0.05	5	0.1	0.1	0.1	0.1	0.1
Mean			26	0.05	0.5	6	14	0.1	42	0.14	25	64	7	7.2	8	15	0.05	0.05	5	0.1	0.1	0.1	0.1	0.1
Waste Classification Criteria [f]																								
CT1			100	-	20	100	100	4	40	-	-	10,000	10	288	600	1000	0.8	200	288	<50	-	60	-	-
SCC1			500	-	100	1,900	1,500	50	1,050	-	-	10,000	18	518	1,080	1,800	10	200	518	<50	-	108	-	-
TCLP1			-	5	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CT2			400	-	80	400	400	16	160	-	-	40,000	40	1,152	2,400	4,000	3.2	800	1,152	<50	-	240	-	-
SCC2			2,000	-	400	7,600	6,000	200	4,200	-	-	40,000	72	2,073	4,320	7,200	23	800	2,073	<50	-	432	-	-
TCLP2			-	20	-	-	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CT1 exceedance TCLP1 and/or SCC1 exceedance CT2 exceedance TCLP2 and/or SCC2 exceedance Asbestos detection

- = Not tested, no criteria or not applicable NAD = no asbestos detected

Notes:

a	QA/QC replicate of sample listed directly below the primary sample
b	Total chromium used as initial screen for chromium(VI).
c	Total recoverable hydrocarbons (TRH) used as an initial screen for total petroleum hydrocarbons (TPH)
d	Criteria for scheduled chemicals used as an initial screen
e	Criteria for Chlorpyrifos used as initial screen
f	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste
PQL	Practical quantitation limit
CT1	Maximum values of specific contaminant concentration (SCC) for classification without TCLP: General solid waste
SCC1	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
TCLP1	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
CT2	Maximum values of specific contaminant concentration (SCC) for classification without TCLP: Restricted solid waste
SCC2	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste
TCLP2	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste

Table E3: Summary of Laboratory Results – Waste Classification

			OPP	PCB	VOC														Asbestos				
			Total Analysed OPP	Total PCB	Tetrachloromethane (carbon tetrachloride / CT)	Monochlorobenzene	Trichloromethane (chloroform / TCM)	1,2-dichlorobenzene	1,4-dichlorobenzene	1,2-dichloroethane	1,1-Dichloroethene	Styrene (vinylbenzene)	1,1,1,2-tetrachloroethane	1,1,2,2-tetrachloroethane	tetrachloroethene (PCE)	1,1,1-trichloroethane	1,1,2-trichloroethane	Trichloroethene (TCE)	Chloroethene (vinyl chloride / VC)	Asbestos ID in materials	Asbestos ID in soil >0.1g/kg	Trace Analysis (AS)	Asbestos Comment	Asbestos Summary
		PQL	0.1	0.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1					
Sample ID	Depth	Sample Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	-	-	-	-	
BH01	0.5 - 0.6 m	25/03/25	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	Nil	-
BD1/20250325	0 m	25/03/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01	1.4 - 1.5 m	25/03/25	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	NAD	NAD	Nil	-
BH02	0.13 - 0.2 m	25/03/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	Nil	-
BH02	0.4 - 0.5 m	25/03/25	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	NAD	NAD	Nil	-
BH03	0.4 - 0.5 m	25/03/25	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	Nil	-
BH04	0.4 - 0.5 m	25/03/25	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	NAD	NAD	Nil	-
BH05	0.15 - 0.2 m	25/03/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	Nil	-
BH05	0.4 - 0.5 m	25/03/25	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	NAD	Nil	-
BH05	0.9 - 1 m	25/03/25	-	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	NAD	NAD	Nil	-
BH05-FC	1.1 m	25/03/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NAD	-	NAD	-	-
BH06	0.4 - 0.5 m	25/03/25	<0.1	<0.1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	-	NAD	NAD	Nil	-
BH02 - [TRIPLICATE]	0.4 - 0.5 m	25/03/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06 - [TRIPLICATE]	0.4 - 0.5 m	25/03/25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Summary Statistics																								
Min			0.1	0.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-
Max			0.1	0.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-
Mean			0.1	0.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	-	-	-	-
Waste Classification Criteria [f]																								
CT1			4	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCC1			7.5	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TCLP1			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CT2			16	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SCC2			30	<50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TCLP2			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CT1 exceedance TCLP1 and/or SCC1 exceedance CT2 exceedance TCLP2 and/or SCC2 exceedance Asbestos detection

- = Not tested, no criteria or not applicable NAD = no asbestos detected

Notes:

a	QA/QC replicate of sample listed directly below the primary sample
b	Total chromium used as initial screen for chromium(VI).
c	Total recoverable hydrocarbons (TRH) used as an initial screen for total petroleum hydrocarbons (TPH)
d	Criteria for scheduled chemicals used as an initial screen
e	Criteria for Chlorpyrifos used as initial screen
f	NSW EPA, 2014, Waste Classification Guidelines Part 1; Classifying Waste
PQL	Practical quantitation limit
CT1	Maximum values of specific contaminant concentration (SCC) for classification without TCLP: General solid waste
SCC1	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
TCLP1	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: General solid waste
CT2	Maximum values of specific contaminant concentration (SCC) for classification without TCLP: Restricted solid waste
SCC2	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste
TCLP2	Maximum values for leachable concentration (TCLP) and specific contaminant concentration (SCC) when used together: Restricted solid waste

Appendix F

Site Assessment Criteria

1. Introduction

1.1 Guidelines

The following key guidelines were consulted for deriving the site assessment criteria (SAC):

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013).
- CRC CARE *Health screening levels for petroleum hydrocarbons in soil and groundwater* (CRC CARE, 2011).
- ANZG *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZG, 2018).
- ANZECC *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC, 2000).

1.2 General

The SAC applied in the current investigation are informed by the CSM which identified human and environmental receptors to potential contamination at the site. Analytical results are assessed (as a Tier 1 assessment) against the SAC comprising primarily the investigation and screening levels of Schedule B1 of NEPC (2013).

The following inputs are relevant to the selection and/or derivation of the SAC:

- Land use: residential, high density (mixed use):
    - Corresponding to land use category 'B', residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats. Whilst the site is proposed for a mixed-use residential development with basement levels, the "B" criteria have been used as an initial conservative screen. Where exceeded, more development-specific criteria will be referenced in accordance with the cited guidelines.
- Soil type: sand (sand has been adopted as a screening tool due to more conservative criteria however on-site soils present multiple fill layers ranging from coarse to fine soils).

2. Soils

2.1 Health investigation and screening levels

The generic health investigation levels (HIL) and health screening levels (HSL) are considered to be appropriate for the assessment of human health risk via all relevant pathways of exposure associated with contamination at the site. The adopted soil HIL and HSL for the contaminants of concern are in Table 1 and Table 2.

Table 1: Health investigation levels (mg/kg)

Contaminant	HIL-B
Metals	
Arsenic	500
Cadmium	150
Chromium (VI)	500
Copper	30 000
Lead	1200
Mercury (inorganic)	120
Nickel	1200
Zinc	60 000
PAH	
B(a)P TEQ	4
Total PAH	400
Phenols	
Phenol	45 000
Pentachlorophenol	130
OCP	
DDT+DDE+DDD	600
Aldrin and dieldrin	10
Chlordane	90
Endosulfan	400
Endrin	20
Heptachlor	10
HCB	15
Methoxychlor	500
OPP	
Chlorpyrifos	340
PCB	
PCB	1

Table 2: Health screening levels (mg/kg)

Contaminant	HSL-A&B	HSL-A&B	HSL-A&B	HSL-A&B
SAND	**0 m to <1 m**	**1 m to <2 m**	**2 m to <4 m**	**4 m+**
Benzene	0.5	0.5	0.5	0.5
Toluene	160	220	310	540
Ethylbenzene	55	NL	NL	NL
Xylenes	40	60	95	170
Naphthalene	3	NL	NL	NL
TRH F1	45	70	110	200
TRH F2	110	240	440	NL

Notes: TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} minus naphthalene
The soil saturation concentration (Csat) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds Csat, a soil vapour source concentration for a petroleum mixture could not exceed a level that would results in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'
scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'

The HSL for direct contact derived from CRC CARE (2011) are in Table 3.

Table 3: Health screening levels for direct contact (mg/kg)

Contaminant	DC HSL-B	DC HSL-IMW
Benzene	140	1100
Toluene	21 000	120 000
Ethylbenzene	5900	85 000
Xylenes	17 000	130 000
Naphthalene	2200	29 000
TRH F1	5600	82 000
TRH F2	4200	62 000
TRH F3	5800	85 000
TRH F4	8100	120 000

Notes: TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} minus naphthalene
IMW intrusive maintenance worker

2.2 Asbestos in soil

Based on the CSM and/or current site access limitations, a detailed asbestos assessment was not considered to be warranted at this stage. However, due to the history of widespread use of ACM products across Australia, ACM can be encountered unexpectedly and sporadically at a site. Therefore, the presence or absence of asbestos at a limit of reporting of 0.1 g/kg (AS:4964) has been adopted for this investigation / assessment as an initial screen.

2.3 Ecological investigation levels

Ecological investigation levels (EIL) and added contaminant limits (ACL), have not been evaluated due to the construction of multiple basement levels at the site. There are not considered to be any environmental receptors as a result.

2.4 Ecological screening levels

The ESL's have not been evaluated due to the construction of multiple basement levels at the site. There are not considered to be any environmental receptors as a result.

2.5 Management limits

In addition to appropriate consideration and application of the HSL and ESL, there are additional considerations which reflect the nature and properties of petroleum hydrocarbons, including:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosion hazards; and
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services.

The adopted management limits are in Table 4.

Table 4: Management limits (mg/kg)

Contaminant	Soil type	ML-A-B-C
TRH F1	Coarse	700
TRH F2	Coarse	1000
TRH F3	Coarse	2500
TRH F4	Coarse	10 000

Notes: TRH F1 is TRH C_6-C_{10} including BTEX
TRH F2 is TRH >C_{10}-C_{16} including naphthalene
ML-A-B-C residential, parkland and public open space

3. Groundwater

3.1 Introduction

The groundwater investigation levels (GIL) used for interpretation of the groundwater data (as a Tier 1 assessment) have been selected for the purposes of a preliminary screening tool, the most conservative criteria for Residential B Land use has been adopted.

Table 5: Groundwater investigation level rationale

Receptor / beneficial use	GIL	Source	Comments / rationale
Aquatic ecosystem	DGV	ANZG (2018)	Freshwater 99% LOP for bioaccumulative contaminants 95% LOP for non-bioaccumulative contaminants
Building occupants (vapour intrusion)	HSL	NEPC (2013)	2 m to <4 m, 4-8 m, and >8m based on measured depths to groundwater. Note that the multi-level basement is likely to sit within groundwater, and therefore the HSL do not apply. If concentrations exceed the laboratory PQL the report will recommend a site specific assessment of groundwater seepage risk into the new basement.

Notes: DGV default guideline value
% LOP percentage level of protection of species
HSL health screening level
GV guideline value
LTV long term value (up to 100 years)
STV short term value (up to 20 years)

3.2 Groundwater investigation levels for aquatic ecosystems

The DGV for the protection of aquatic ecosystems derived from ANZG (2018) are in Table 6.

Table 6: Groundwater investigation levels for protection of aquatic ecosystems (µg/L)

Contaminant	Freshwater DGV 95% LOP	Notes
Metals / metalloids		
Arsenic	24 / 13	Levels provided for As III / As IV respectively. Moderate reliability.
Cadmium	0.2	Very high reliability.
Chromium (VI)	1	Chromium VI levels adopted as initial screen for total chromium. Very high reliability.
Copper	1.4	Very high reliability.
Lead	3.4	Moderate reliability.
Mercury (inorganic)	0.06	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Nickel	11	Low reliability.
Zinc	8	Very high reliability.
BTEX		
Benzene	950	Moderate reliability.

Contaminant	Freshwater DGV 95% LOP	Notes
Ethylbenzene	80	Unknown reliability.
m-Xylene	75	Unknown reliability.
o-xylene	350	Low reliability.
p-Xylene	200	Low reliability.
Toluene	180	Unknown reliability.
PAH		
Anthracene	0.01	99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
Benzo(a)pyrene	0.1	99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
Fluoranthene	1	99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
Naphthalene	16	Low reliability.
Phenanthrene	0.6	99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
OCP		
Aldrin	0.001	Unknown reliability and LOP.
Chlordane	0.03	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
DDT	0.006	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Dieldrin	0.01	Unknown reliability and LOP.
Endosulfan	0.03	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Endrin	0.01	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Heptachlor	0.01	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Methoxychlor	0.005	Unknown reliability and LOP.
OPP		
Chlorpyrifos	0.01	Moderate reliability.
Diazinon	0.01	Moderate reliability.
Dimethoate	0.15	Low reliability.
Fenitrothion	0.2	Moderate reliability.
Malathion	0.05	Moderate reliability.

Contaminant	Freshwater DGV 95% LOP	Notes
Parathion	0.004	Moderate reliability.
PCB		
Aroclor 1242	0.3	99% LOP adopted as recommended due to potential for bioaccumulation. Low reliability.
Aroclor 1254	0.01	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
VOC		
Tetrachloroethene (PCE)	70	Unknown reliability.
Trichloroethene (TCE)	330	Unknown reliability.
1,1-dichloroethene (DCE)	700	Unknown reliability.
Chloroethene (vinyl chloride / VC)	100	Unknown reliability.
Tetrachloromethane (carbon tetrachloride / CT)	240	Unknown reliability.
Trichloromethane (chloroform / TCM)	370	99% LOP adopted as recommended to protect key species from chronic toxicity. Unknown reliability.
Inorganics		
Ammonia	900	Very high reliability.

Notes: 95% LOP for non-bioaccumulative contaminants
99% LOP for bioaccumulative contaminants

3.3 Health screening levels for vapour intrusion

The HSL to evaluate potential vapour intrusion risks derived from NEPC (2013) are in Table 7. There are no generic HSL for groundwater within 2 m of the ground (or basement) level.

Table 7: Groundwater health screening levels for vapour intrusion (µg/L)

Contaminant	HSL-A&B	HSL-A&B	HSL-A&B	Solubility limit
SAND	**2 m to <4 m**	**4 m to <8 m**	**8 m+**	**-**
Benzene	800	800	900	59 000
Toluene	NL	NL	NL	61 000
Ethylbenzene	NL	NL	NL	3900
Xylenes	NL	NL	NL	21 000
Naphthalene	NL	NL	NL	170
TRH F1	1000	1000	1000	9000
TRH F2	1000	1000	1000	3000

Notes: TRH F1 is TRH C_6-C_{10} minus BTEX
TRH F2 is TRH >C_{10}-C_{16} minus naphthalene
The solubility limit is defined as the groundwater concentration at which the water cannot dissolve any more of an individual chemical based on a petroleum mixture. The soil vapour that is in equilibrium with the groundwater will be at its maximum. If the derived groundwater HSL exceeds the water solubility limit, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.

4. References

ANZECC. (2000). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australia and New Zealand Environment and Conservation Council.

ANZG. (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Canberra, ACT: Australian and New Zealand Governments and Australian state and territory governments.

CRC CARE. (2011). *Health screening levels for petroleum hydrocarbons in soil and groundwater.* Parts 1 to 3, Technical Report No. 10: Cooperative Research Centre for Contamination Assessment and Remediation of the Environment.

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM].* Australian Government Publishing Services Canberra: National Environment Protection Council.

NHMRC, NRMMC. (2022). *Australian Drinking Water Guidelines 6 2011, Version 3.7.* Canberra: National Health and Medical Research Council, National Resource Management Ministerial Council.

Appendix G

Field Work Methodology

1. Guidelines

The following key guidelines were consulted for the field work methodology:

- NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013).

2. Soil sampling

Soil sampling was carried out in accordance with Douglas' standard operating procedures. The general sampling and sample management procedures comprise:

- Collect soil samples directly from the solid flight auger and hand auger at regular intervals to a maximum depth of 1.5 m bgl;
- Place samples into laboratory-prepared glass jars with Teflon lined lids, capping immediately and minimising headspace within the sample jar;
- Collect replicate samples in zip-lock bags for photoionisation detector (PID) screening;
- Collect ~500 ml samples for fibrous asbestos and asbestos fines (FA and AF) analysis;
- Collect ~40 g to 50 g samples in zip-lock bags for asbestos (presence / absence) analysis;
- Wear a new disposable nitrile glove for each sample point thereby minimising potential for cross-contamination;
- Collect 10% replicate samples for quality control (QC) purposes;
- Label sample containers with individual and unique identification details, including project number, sample location and sample depth (where applicable);
- Place samples into a cooled, insulated and sealed container for transport to the laboratory; and
- Use chain of custody documentation.

3. Groundwater sampling

3.1 Monitoring well installation

Monitoring wells are constructed using class 18 uPVC machine slotted screen and blank sections with screw threaded joints. The screened section of each well is backfilled with a washed gravel filter pack to approximately 0.5 m above the screened interval. Each well is completed with a hydrated bentonite plug at least 0.5 m thick and then backfilled to the surface.

3.2 Monitoring well development

Groundwater monitoring wells are developed as soon as practicable following well installation. The purpose of well development is to remove sediments and / or drilling fluid introduced to the well during drilling and to facilitate connection of the monitoring well to the aquifer. The wells are developed by pumping / bailing to remove a minimum of three well volumes, or until dry.

3.3 Groundwater sampling

Bladder pump

Groundwater sampling is carried out in accordance with Douglas' standard operating procedures. Groundwater samples are collected using a positive displacement low flow bladder pump via the micro-purge (minimal drawdown) method. The method minimises aeration of the sample and disturbance to the water column thereby enhancing the quality of results for oxygen sensitive analytes. The sampling method is described as follows:

- Measure the static water level using an electronic interface probe and record the thickness of any LNAPL (if encountered);
- Decontaminate the interface probe and cable between monitoring wells by rinsing in a diluted Liquinox solution and then rinsing in demineralised water;
- Fit the pump with a well-dedicated bladder and tubing. Lower the pump into the well then clamp at a level estimated to be the approximate mid-point of the well screen;
- Set the pump at the lowest rate possible that could produce laminar flow to minimise drawdown of the water column;
- Measure physical parameters by continuously passing the purged water through a flow cell; and
- Following stabilisation of the field parameters, collect samples in laboratory-prepared bottles minimising headspace within the sample bottle and cap immediately.

Sample handling

The general groundwater sample handling and management procedures comprise:

- Collect 10% replicate samples for QC purposes;
- Label sample containers with individual and unique identification details, including project number and sample location;
- Place the sample jars into a cooled, insulated and sealed container for transport to the laboratory; and
- Use chain of custody documentation.

4. References

NEPC. (2013). *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM].* Australian Government Publishing Services Canberra: National Environment Protection Council.

Appendix H

Laboratory Certificates

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

CERTIFICATE OF ANALYSIS 378301

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86230.01, St Leonards**
Number of Samples	21 Soil, 1 Material
Date samples received	15/04/2025
Date completed instructions received	15/04/2025

Analysis Details

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

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

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

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

Report Details

Date results requested by	24/04/2025
Date of Issue	24/04/2025

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

Results Approved By
Giovanni Agosti, Group Technical Manager
Jack Wallis, Senior Chemist
Jenny He, Inorganic Team Leader
Liam Timmins, Organics Supervisor
Lucy Zhu, Asbestos Supervisor
Priya Samarawickrama, Senior Chemist
Steven Luong, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in soil						
Our Reference		378301-5	378301-8	378301-13	378301-16	378301-19
Your Reference	UNITS	BH01	BH02	BH04	BH05	BH06
Depth		1.4-1.5	0.4-0.5	0.4-0.5	0.9-1	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date Extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date Analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Dichlorodifluoromethane	mg/kg	<1	<1	<1	<1	<1
Chloromethane	mg/kg	<1	<1	<1	<1	<1
Vinyl Chloride	mg/kg	<1	<1	<1	<1	<1
Bromomethane	mg/kg	<1	<1	<1	<1	<1
Chloroethane	mg/kg	<1	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1	<1	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1	<1	<1	<1
trans-1,2-Dichloroethene	mg/kg	<1	<1	<1	<1	<1
1,1-Dichloroethane	mg/kg	<1	<1	<1	<1	<1
cis-1,2-Dichloroethene	mg/kg	<1	<1	<1	<1	<1
Bromochloromethane	mg/kg	<1	<1	<1	<1	<1
Chloroform	mg/kg	<1	<1	<1	<1	<1
2,2-Dichloropropane	mg/kg	<1	<1	<1	<1	<1
1,2-Dichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1,1-Trichloroethane	mg/kg	<1	<1	<1	<1	<1
1,1-Dichloropropene	mg/kg	<1	<1	<1	<1	<1
Cyclohexane	mg/kg	<1	<1	<1	<1	<1
Carbon Tetrachloride	mg/kg	<1	<1	<1	<1	<1
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dibromomethane	mg/kg	<1	<1	<1	<1	<1
1,2-Dichloropropane	mg/kg	<1	<1	<1	<1	<1
Trichloroethene	mg/kg	<1	<1	<1	<1	<1
Bromodichloromethane	mg/kg	<1	<1	<1	<1	<1
trans-1,3-Dichloropropene	mg/kg	<1	<1	<1	<1	<1
cis-1,3-Dichloropropene	mg/kg	<1	<1	<1	<1	<1
1,1,2-Trichloroethane	mg/kg	<1	<1	<1	<1	<1
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
1,3-Dichloropropane	mg/kg	<1	<1	<1	<1	<1
Dibromochloromethane	mg/kg	<1	<1	<1	<1	<1
1,2-Dibromoethane	mg/kg	<1	<1	<1	<1	<1
Tetrachloroethene	mg/kg	<1	<1	<1	<1	<1
1,1,1,2-Tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
Chlorobenzene	mg/kg	<1	<1	<1	<1	<1

VOCs in soil						
Our Reference		378301-5	378301-8	378301-13	378301-16	378301-19
Your Reference	UNITS	BH01	BH02	BH04	BH05	BH06
Depth		1.4-1.5	0.4-0.5	0.4-0.5	0.9-1	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
Bromoform	mg/kg	<1	<1	<1	<1	<1
m+p-Xylene	mg/kg	<2	<2	<2	<2	<2
Styrene	mg/kg	<1	<1	<1	<1	<1
1,1,2,2-Tetrachloroethane	mg/kg	<1	<1	<1	<1	<1
o-Xylene	mg/kg	<1	<1	<1	<1	<1
1,2,3-Trichloropropane	mg/kg	<1	<1	<1	<1	<1
Isopropylbenzene	mg/kg	<1	<1	<1	<1	<1
Bromobenzene	mg/kg	<1	<1	<1	<1	<1
n-Propylbenzene	mg/kg	<1	<1	<1	<1	<1
2-Chlorotoluene	mg/kg	<1	<1	<1	<1	<1
4-Chlorotoluene	mg/kg	<1	<1	<1	<1	<1
1,3,5-Trimethylbenzene	mg/kg	<1	<1	<1	<1	<1
tert-Butylbenzene	mg/kg	<1	<1	<1	<1	<1
1,2,4-Trimethylbenzene	mg/kg	<1	<1	<1	<1	<1
1,3-Dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
sec-Butylbenzene	mg/kg	<1	<1	<1	<1	<1
1,4-Dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
4-Isopropyltoluene	mg/kg	<1	<1	<1	<1	<1
1,2-Dichlorobenzene	mg/kg	<1	<1	<1	<1	<1
n-Butylbenzene	mg/kg	<1	<1	<1	<1	<1
1,2-Dibromo-3-chloropropane	mg/kg	<1	<1	<1	<1	<1
1,2,4-Trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
Hexachlorobutadiene	mg/kg	<1	<1	<1	<1	<1
1,2,3-Trichlorobenzene	mg/kg	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	101	114	103	102	100
Surrogate aaa-Trifluorotoluene	%	96	97	97	100	106
Surrogate Toluene-d_8	%	99	102	99	99	99
Surrogate 4-Bromofluorobenzene	%	99	101	99	98	99

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		378301-3	378301-5	378301-7	378301-8	378301-11
Your Reference	UNITS	BH01	BH01	BH02	BH02	BH03
Depth		0.5-0.6	1.4-1.5	0.13-0.2	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	105	96	104	97	103

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		378301-13	378301-14	378301-15	378301-16	378301-19
Your Reference	UNITS	BH04	BH05	BH05	BH05	BH06
Depth		0.4-0.5	0.15-0.2	0.4-0.5	0.9-1	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	97	91	100	100	106

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		378301-20	378301-21	378301-22
Your Reference	UNITS	TB	TS	BD1/20250325
Depth		-	-	-
Date Sampled		25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025
TRH C_6 - C_9	mg/kg	[NA]	[NA]	<25
TRH C_6 - C_{10}	mg/kg	[NA]	[NA]	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	[NA]	[NA]	<25
Benzene	mg/kg	<0.2	88%	<0.2
Toluene	mg/kg	<0.5	87%	<0.5
Ethylbenzene	mg/kg	<1	88%	<1
m+p-xylene	mg/kg	<2	89%	<2
o-Xylene	mg/kg	<1	88%	<1
Naphthalene	mg/kg	[NA]	[NA]	<1
Total +ve Xylenes	mg/kg	[NA]	[NA]	<1
Surrogate aaa-Trifluorotoluene	%	109	88	102

svTRH (C10-C40) in Soil						
Our Reference		378301-3	378301-5	378301-7	378301-8	378301-11
Your Reference	UNITS	BH01	BH01	BH02	BH02	BH03
Depth		0.5-0.6	1.4-1.5	0.13-0.2	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	110
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	110
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	120
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	120
Surrogate o-Terphenyl	%	110	121	102	109	109

svTRH (C10-C40) in Soil						
Our Reference		378301-13	378301-14	378301-15	378301-16	378301-19
Your Reference	UNITS	BH04	BH05	BH05	BH05	BH06
Depth		0.4-0.5	0.15-0.2	0.4-0.5	0.9-1	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	140	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	140	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	56	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	56	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	130	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	190	<50
Surrogate o-Terphenyl	%	105	101	115	106	103

svTRH (C10-C40) in Soil		
Our Reference		378301-22
Your Reference	UNITS	BD1/20250325
Depth		-
Date Sampled		25/03/2025
Type of sample		Soil
Date extracted	-	16/04/2025
Date analysed	-	17/04/2025
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	117

PAHs in Soil						
Our Reference		378301-3	378301-5	378301-7	378301-8	378301-11
Your Reference	UNITS	BH01	BH01	BH02	BH02	BH03
Depth		0.5-0.6	1.4-1.5	0.13-0.2	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	22/04/2025	22/04/2025	22/04/2025	22/04/2025	22/04/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	111	119	118	113	107

PAHs in Soil						
Our Reference		378301-13	378301-14	378301-15	378301-16	378301-19
Your Reference	UNITS	BH04	BH05	BH05	BH05	BH06
Depth		0.4-0.5	0.15-0.2	0.4-0.5	0.9-1	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	22/04/2025	22/04/2025	22/04/2025	22/04/2025	22/04/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	109	109	106	126	112

PAHs in Soil		
Our Reference		378301-22
Your Reference	UNITS	BD1/20250325
Depth		-
Date Sampled		25/03/2025
Type of sample		Soil
Date extracted	-	16/04/2025
Date analysed	-	22/04/2025
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	113

Organochlorine Pesticides in soil						
Our Reference		378301-3	378301-8	378301-11	378301-13	378301-15
Your Reference	UNITS	BH01	BH02	BH03	BH04	BH05
Depth		0.5-0.6	0.4-0.5	0.4-0.5	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	22/04/2025	22/04/2025	22/04/2025	22/04/2025	22/04/2025
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	120	118	120	122	122

Organochlorine Pesticides in soil		
Our Reference		378301-19
Your Reference	UNITS	BH06
Depth		0.4-0.5
Date Sampled		25/03/2025
Type of sample		Soil
Date extracted	-	16/04/2025
Date analysed	-	22/04/2025
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Mirex	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1
Surrogate 4-Chloro-3-NBTF	%	121

Organophosphorus Pesticides in Soil						
Our Reference		378301-3	378301-8	378301-11	378301-13	378301-15
Your Reference	UNITS	BH01	BH02	BH03	BH04	BH05
Depth		0.5-0.6	0.4-0.5	0.4-0.5	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	22/04/2025	22/04/2025	22/04/2025	22/04/2025	22/04/2025
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	120	118	120	122	122

Organophosphorus Pesticides in Soil		
Our Reference		378301-19
Your Reference	UNITS	BH06
Depth		0.4-0.5
Date Sampled		25/03/2025
Type of sample		Soil
Date extracted	-	16/04/2025
Date analysed	-	22/04/2025
Dichlorvos	mg/kg	<0.1
Mevinphos	mg/kg	<0.1
Phorate	mg/kg	<0.1
Dimethoate	mg/kg	<0.1
Diazinon	mg/kg	<0.1
Disulfoton	mg/kg	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1
Parathion-Methyl	mg/kg	<0.1
Ronnel	mg/kg	<0.1
Fenitrothion	mg/kg	<0.1
Malathion	mg/kg	<0.1
Chlorpyriphos	mg/kg	<0.1
Fenthion	mg/kg	<0.1
Parathion	mg/kg	<0.1
Bromophos-ethyl	mg/kg	<0.1
Methidathion	mg/kg	<0.1
Fenamiphos	mg/kg	<0.1
Ethion	mg/kg	<0.1
Phosalone	mg/kg	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1
Coumaphos	mg/kg	<0.1
Surrogate 4-Chloro-3-NBTF	%	121

PCBs in Soil						
Our Reference		378301-3	378301-8	378301-11	378301-13	378301-15
Your Reference	UNITS	BH01	BH02	BH03	BH04	BH05
Depth		0.5-0.6	0.4-0.5	0.4-0.5	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	22/04/2025	22/04/2025	22/04/2025	22/04/2025	22/04/2025
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 2-Fluorobiphenyl	%	117	117	118	117	117

PCBs in Soil		
Our Reference		378301-19
Your Reference	UNITS	BH06
Depth		0.4-0.5
Date Sampled		25/03/2025
Type of sample		Soil
Date extracted	-	16/04/2025
Date analysed	-	22/04/2025
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate 2-Fluorobiphenyl	%	117

Misc Soil - Inorg						
Our Reference		378301-3	378301-8	378301-11	378301-13	378301-15
Your Reference	UNITS	BH01	BH02	BH03	BH04	BH05
Depth		0.5-0.6	0.4-0.5	0.4-0.5	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg		
Our Reference		378301-19
Your Reference	UNITS	BH06
Depth		0.4-0.5
Date Sampled		25/03/2025
Type of sample		Soil
Date prepared	-	16/04/2025
Date analysed	-	24/04/2025
Total Phenolics (as Phenol)	mg/kg	<5

Acid Extractable metals in soil						
Our Reference		378301-3	378301-5	378301-7	378301-8	378301-11
Your Reference	UNITS	BH01	BH01	BH02	BH02	BH03
Depth		0.5-0.6	1.4-1.5	0.13-0.2	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Arsenic	mg/kg	6	11	<4	<4	11
Cadmium	mg/kg	0.9	0.5	<0.4	<0.4	<0.4
Chromium	mg/kg	6	4	4	5	9
Copper	mg/kg	41	37	15	24	38
Lead	mg/kg	18	20	3	2	22
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	45	55	27	62	36
Zinc	mg/kg	370	260	18	27	190

Acid Extractable metals in soil						
Our Reference		378301-13	378301-14	378301-15	378301-16	378301-19
Your Reference	UNITS	BH04	BH05	BH05	BH05	BH06
Depth		0.4-0.5	0.15-0.2	0.4-0.5	0.9-1	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Arsenic	mg/kg	4	<4	<4	5	170
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	13	2	9	8	6
Copper	mg/kg	40	5	27	41	25
Lead	mg/kg	11	2	16	22	30
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Nickel	mg/kg	47	1	25	28	63
Zinc	mg/kg	130	3	78	110	62

Acid Extractable metals in soil				
Our Reference		378301-22	378301-23	378301-24
Your Reference	UNITS	BD1/20250325	BH02 - [TRIPLICATE]	BH06 - [TRIPLICATE]
Depth		-	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil
Date prepared	-	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025
Arsenic	mg/kg	5	<4	100
Cadmium	mg/kg	0.6	<0.4	<0.4
Chromium	mg/kg	7	5	6
Copper	mg/kg	41	46	23
Lead	mg/kg	15	4	17
Mercury	mg/kg	<0.1	<0.1	0.1
Nickel	mg/kg	51	59	45
Zinc	mg/kg	260	49	60

Moisture						
Our Reference		378301-3	378301-5	378301-7	378301-8	378301-11
Your Reference	UNITS	BH01	BH01	BH02	BH02	BH03
Depth		0.5-0.6	1.4-1.5	0.13-0.2	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Moisture	%	13	12	13	1.3	6.7

Moisture						
Our Reference		378301-13	378301-14	378301-15	378301-16	378301-19
Your Reference	UNITS	BH04	BH05	BH05	BH05	BH06
Depth		0.4-0.5	0.15-0.2	0.4-0.5	0.9-1	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	16/04/2025	16/04/2025	16/04/2025	16/04/2025	16/04/2025
Date analysed	-	17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Moisture	%	7.0	12	4.8	7.4	8.2

Moisture		
Our Reference		378301-22
Your Reference	UNITS	BD1/20250325
Depth		-
Date Sampled		25/03/2025
Type of sample		Soil
Date prepared	-	16/04/2025
Date analysed	-	17/04/2025
Moisture	%	14

Asbestos ID - soils						
Our Reference		378301-3	378301-5	378301-7	378301-8	378301-11
Your Reference	UNITS	BH01	BH01	BH02	BH02	BH03
Depth		0.5-0.6	1.4-1.5	0.13-0.2	0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Sample mass tested	g	Approx. 50g	Approx. 60g	Approx. 60g	Approx. 55g	Approx. 65g
Sample Description	-	Grey fine-grained soil & rocks	Grey fine-grained soil & rocks	Brown coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey fine-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	Nil	Nil	Nil	Nil	Nil
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		378301-13	378301-14	378301-15	378301-16	378301-19
Your Reference	UNITS	BH04	BH05	BH05	BH05	BH06
Depth		0.4-0.5	0.15-0.2	0.4-0.5	0.9-1	0.4-0.5
Date Sampled		25/03/2025	25/03/2025	25/03/2025	25/03/2025	25/03/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Sample mass tested	g	Approx. 80g	Approx. 65g	Approx. 80g	Approx. 70g	Approx. 80g
Sample Description	-	Brown coarse-grained soil & rocks	Brown sandy soil	Brown coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	Nil	Nil	Nil	Nil	Nil
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - materials		
Our Reference		378301-17
Your Reference	UNITS	BH05-FC
Depth		1.1
Date Sampled		25/03/2025
Type of sample		Material
Date analysed	-	17/04/2025
Mass / Dimension of Sample	-	80x70x4mm
Sample Description	-	White plastic-like material
Asbestos ID in materials	-	No asbestos detected
Trace Analysis	-	No asbestos detected

Misc Inorg - Soil			
Our Reference		378301-3	378301-13
Your Reference	UNITS	BH01	BH04
Depth		0.5-0.6	0.4-0.5
Date Sampled		25/03/2025	25/03/2025
Type of sample		Soil	Soil
Date prepared	-	22/04/2025	22/04/2025
Date analysed	-	22/04/2025	22/04/2025
pH 1:5 soil:water	pH Units	6.9	9.4

CEC			
Our Reference		378301-3	378301-13
Your Reference	UNITS	BH01	BH04
Depth		0.5-0.6	0.4-0.5
Date Sampled		25/03/2025	25/03/2025
Type of sample		Soil	Soil
Date prepared	-	23/04/2025	23/04/2025
Date analysed	-	23/04/2025	23/04/2025
Exchangeable Ca	meq/100g	2.3	13
Exchangeable K	meq/100g	0.4	0.3
Exchangeable Mg	meq/100g	1.1	2.2
Exchangeable Na	meq/100g	0.2	0.7
Cation Exchange Capacity	meq/100g	3.9	16

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES. Total Phosphate determined stochiometrically from Phosphorus (assumed to be present as Phosphate). Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD and/or GC-MS/GC-MSMS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.

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

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date Extracted	-			16/04/2025	8	16/04/2025	16/04/2025		16/04/2025	[NT]
Date Analysed	-			17/04/2025	8	17/04/2025	17/04/2025		17/04/2025	[NT]
Dichlorodifluoromethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
trans-1,2-Dichloroethene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,1-Dichloroethane	mg/kg	1	Org-023	<1	8	<1	<1	0	118	[NT]
cis-1,2-Dichloroethene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Bromochloromethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Chloroform	mg/kg	1	Org-023	<1	8	<1	<1	0	122	[NT]
2,2-Dichloropropane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,2-Dichloroethane	mg/kg	1	Org-023	<1	8	<1	<1	0	107	[NT]
1,1,1-Trichloroethane	mg/kg	1	Org-023	<1	8	<1	<1	0	126	[NT]
1,1-Dichloropropene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Carbon Tetrachloride	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	8	<0.2	<0.2	0	109	[NT]
Dibromomethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,2-Dichloropropane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Trichloroethene	mg/kg	1	Org-023	<1	8	<1	<1	0	117	[NT]
Bromodichloromethane	mg/kg	1	Org-023	<1	8	<1	<1	0	127	[NT]
trans-1,3-Dichloropropene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
cis-1,3-Dichloropropene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,1,2-Trichloroethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	8	<0.5	<0.5	0	112	[NT]
1,3-Dichloropropane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Dibromochloromethane	mg/kg	1	Org-023	<1	8	<1	<1	0	128	[NT]
1,2-Dibromoethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Tetrachloroethene	mg/kg	1	Org-023	<1	8	<1	<1	0	112	[NT]
1,1,1,2-Tetrachloroethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Chlorobenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	116	[NT]
Bromoform	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
m+p-Xylene	mg/kg	2	Org-023	<2	8	<2	<2	0	114	[NT]
Styrene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,1,2,2-Tetrachloroethane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
o-Xylene	mg/kg	1	Org-023	<1	8	<1	<1	0	118	[NT]
1,2,3-Trichloropropane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Isopropylbenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Bromobenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
n-Propylbenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
2-Chlorotoluene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
4-Chlorotoluene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,3,5-Trimethylbenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
tert-Butylbenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,2,4-Trimethylbenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,3-Dichlorobenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
sec-Butylbenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,4-Dichlorobenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
4-Isopropyltoluene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,2-Dichlorobenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
n-Butylbenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,2-Dibromo-3-chloropropane	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,2,4-Trichlorobenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
1,2,3-Trichlorobenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	8	114	102	11	99	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	103	8	97	98	1	110	[NT]
Surrogate Toluene-d_8	%		Org-023	100	8	102	99	3	100	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	100	8	101	99	2	100	[NT]

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date Extracted	-			[NT]	19	16/04/2025	16/04/2025		[NT]	[NT]
Date Analysed	-			[NT]	19	17/04/2025	17/04/2025		[NT]	[NT]
Dichlorodifluoromethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
trans-1,2-Dichloroethene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,1-Dichloroethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
cis-1,2-Dichloroethene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Bromochloromethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Chloroform	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
2,2-Dichloropropane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,2-Dichloroethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,1,1-Trichloroethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,1-Dichloropropene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Carbon Tetrachloride	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	19	<0.2	<0.2	0	[NT]	[NT]
Dibromomethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,2-Dichloropropane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Trichloroethene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Bromodichloromethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
trans-1,3-Dichloropropene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
cis-1,3-Dichloropropene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,1,2-Trichloroethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	19	<0.5	<0.5	0	[NT]	[NT]
1,3-Dichloropropane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Dibromochloromethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,2-Dibromoethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Tetrachloroethene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,1,1,2-Tetrachloroethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Chlorobenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Bromoform	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
m+p-Xylene	mg/kg	2	Org-023	[NT]	19	<2	<2	0	[NT]	[NT]
Styrene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,1,2,2-Tetrachloroethane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,2,3-Trichloropropane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Isopropylbenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Bromobenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
n-Propylbenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
2-Chlorotoluene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
4-Chlorotoluene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,3,5-Trimethylbenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
tert-Butylbenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,2,4-Trimethylbenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,3-Dichlorobenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
sec-Butylbenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,4-Dichlorobenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
4-Isopropyltoluene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,2-Dichlorobenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
n-Butylbenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,2-Dibromo-3-chloropropane	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,2,4-Trichlorobenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
1,2,3-Trichlorobenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	[NT]	19	100	108	8	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	19	106	108	2	[NT]	[NT]
Surrogate Toluene-d_8	%		Org-023	[NT]	19	99	101	2	[NT]	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	[NT]	19	99	100	1	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/04/2025	8	16/04/2025	16/04/2025		16/04/2025	[NT]
Date analysed	-			17/04/2025	8	17/04/2025	17/04/2025		17/04/2025	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	8	<25	<25	0	91	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	8	<25	<25	0	91	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	8	<0.2	<0.2	0	109	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	8	<0.5	<0.5	0	112	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	8	<1	<1	0	116	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	8	<2	<2	0	114	[NT]
o-Xylene	mg/kg	1	Org-023	<1	8	<1	<1	0	118	[NT]
Naphthalene	mg/kg	1	Org-023	<1	8	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	103	8	97	98	1	110	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/04/2025	16/04/2025		[NT]	[NT]
Date analysed	-			[NT]	19	17/04/2025	17/04/2025		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	19	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	19	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	19	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	19	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	19	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	19	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	19	106	108	2	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/04/2025	8	16/04/2025	16/04/2025		16/04/2025	[NT]
Date analysed	-			17/04/2025	8	17/04/2025	17/04/2025		17/04/2025	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	8	<50	<50	0	103	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	8	<100	<100	0	92	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	8	<100	<100	0	100	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	8	<50	<50	0	103	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	8	<100	<100	0	92	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	8	<100	<100	0	100	[NT]
Surrogate o-Terphenyl	%		Org-020	107	8	109	108	1	114	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/04/2025	16/04/2025		[NT]	[NT]
Date analysed	-			[NT]	19	17/04/2025	17/04/2025		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	19	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	19	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	19	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	19	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	19	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	19	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	19	103	103	0	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/04/2025	8	16/04/2025	16/04/2025		16/04/2025	[NT]
Date analysed	-			22/04/2025	8	22/04/2025	22/04/2025		22/04/2025	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	102	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	90	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	94	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	98	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	106	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	120	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	8	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	8	<0.05	<0.05	0	96	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	110	8	113	110	3	126	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/04/2025	16/04/2025		[NT]	[NT]
Date analysed	-			[NT]	19	22/04/2025	22/04/2025		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	19	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	19	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	19	112	107	5	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/04/2025	8	16/04/2025	16/04/2025		16/04/2025	[NT]
Date analysed	-			22/04/2025	8	22/04/2025	22/04/2025		22/04/2025	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	106	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	100	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	92	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	110	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	112	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	104	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	118	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	90	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	112	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	80	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	128	8	118	119	1	137	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/04/2025	16/04/2025		[NT]	[NT]
Date analysed	-			[NT]	19	22/04/2025	22/04/2025		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	19	121	133	9	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/04/2025	8	16/04/2025	16/04/2025		16/04/2025	[NT]
Date analysed	-			22/04/2025	8	22/04/2025	22/04/2025		22/04/2025	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	120	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	108	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	115	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	124	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	112	[NT]
Fenthion	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	109	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	112	[NT]
Phosalone	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	128	8	118	119	1	137	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/04/2025	16/04/2025		[NT]	[NT]
Date analysed	-			[NT]	19	22/04/2025	22/04/2025		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	19	121	133	9	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			16/04/2025	8	16/04/2025	16/04/2025		16/04/2025	[NT]
Date analysed	-			22/04/2025	8	22/04/2025	22/04/2025		22/04/2025	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	8	<0.1	<0.1	0	85	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	8	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	121	8	117	117	0	137	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	19	16/04/2025	16/04/2025		[NT]	[NT]
Date analysed	-			[NT]	19	22/04/2025	22/04/2025		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	[NT]	19	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	[NT]	19	117	116	1	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			16/04/2025	3	16/04/2025	16/04/2025		16/04/2025	[NT]
Date analysed	-			24/04/2025	3	24/04/2025	24/04/2025		24/04/2025	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	3	<5	<5	0	88	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			16/04/2025	8	16/04/2025	16/04/2025		16/04/2025	[NT]
Date analysed	-			17/04/2025	8	17/04/2025	17/04/2025		17/04/2025	[NT]
Arsenic	mg/kg	4	Metals-020	<4	8	<4	<4	0	117	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	8	<0.4	<0.4	0	105	[NT]
Chromium	mg/kg	1	Metals-020	<1	8	5	5	0	108	[NT]
Copper	mg/kg	1	Metals-020	<1	8	24	46	63	108	[NT]
Lead	mg/kg	1	Metals-020	<1	8	2	3	40	106	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	8	<0.1	<0.1	0	120	[NT]
Nickel	mg/kg	1	Metals-020	<1	8	62	61	2	106	[NT]
Zinc	mg/kg	1	Metals-020	<1	8	27	45	50	106	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	19	16/04/2025	16/04/2025		[NT]	[NT]
Date analysed	-			[NT]	19	17/04/2025	17/04/2025		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	19	170	220	26	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	19	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	19	6	5	18	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	19	25	20	22	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	19	30	21	35	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	19	0.2	0.1	67	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	19	63	110	54	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	19	62	54	14	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			22/04/2025	[NT]	[NT]	[NT]	[NT]	22/04/2025	[NT]
Date analysed	-			22/04/2025	[NT]	[NT]	[NT]	[NT]	22/04/2025	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			23/04/2025	3	23/04/2025	23/04/2025		23/04/2025	[NT]
Date analysed	-			23/04/2025	3	23/04/2025	23/04/2025		23/04/2025	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	3	2.3	2.2	4	102	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	3	0.4	0.4	0	109	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	3	1.1	1.0	10	101	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	3	0.2	0.2	0	103	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

Acid Extractable Metals in Soil:
-The laboratory RPD acceptance criteria has been exceeded for 378301-8 for Cu and Zn. Therefore a triplicate result has been issued as laboratory sample number 378301-23.
-The laboratory RPD acceptance criteria has been exceeded for 378301-19 for Ni.
Therefore a triplicate result has been issued as laboratory sample number 378301-24.

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

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to ASB-001 asbestos subsampling procedure. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab/MPL recommends supplying 40-60g or 500ml of sample in its own container.
Note: Samples requested for asbestos testing were sub-sampled from bags provided by the client.

Douglas PARTNERS | GROUNDED EXPERTISE

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	86230.01	**Suburb:**	St Leonards	**To:**	Envirolab Services
Project Manager:	Paul.Gorman	**Order Number:**		**Sampler:**	JDS
Email:	Paul.Gorman@douglaspartners.com.au			**Attn:**	Sample Receipt
Turnaround time:	☑ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day				(02) 9910 6200 samplereceipt@envirolab.com
Prior Storage:	☐ Fridge ☐ Freezer ☐ Esky ☐ Shelf	**Do samples contain 'potential' HBM?**	☐ No ☐ Yes (If YES, then handle, transport and store in accordance with FPM HAZID)		

	Sample ID			Date Sampled	Sample Type	Container Type	Analytes											Notes/ Preservation/ Additional Requirements
	Location / Other ID	Depth From	Depth To		S - soil W - water M - Material	G - glass P - plastic	Combo 8a	Combo 3a	VOC	pH, CEC	BTEX	Combo 3	Asbestial material					
BH01 1		0.15	0.16	25/03/25	S	G,P												HOLD
BH01 2		0.28	0.35	25/03/25	S	G,P												HOLD
BH01 3		0.5	0.6	25/03/25	S	G,P	x			x								
BH01 4		0.9	1	25/03/25	S	G,P												HOLD
BH01 5		1.4	1.5	25/03/25	S	G,P		x	x									
BH01 6		1.9	2	25/03/25	S	G,P												HOLD
BH02 7		0.13	0.2	25/03/25	S	G,P		x										
BH02 8		0.4	0.5	25/03/25	S	G,P	x		x									
BH02 9		0.9	1	25/03/25	S	G,P												HOLD
BH03 10		0.15	0.2	25/03/25	S	G,P												HOLD
BH03 11		0.4	0.5	25/03/25	S	G,P	x											
BH04 12		0.15	0.2	25/03/25	S	G,P												HOLD
BH04 13		0.4	0.5	25/03/25	S	G,P	x		x	x								
BH05 14		0.15	0.2	25/03/25	S	G,P		x										

ENVIROLAB Group

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

Job No: 378301
Date Received: 15/4/25
Time Received: 1210
Received By: JW
Temp: Cool/Ambient
Cooling: Ice/Icepack 12°C
Security: Intact/Broken/None

Metals to analyse:			**LAB RECEIPT**
Number of samples in container:		**Transported to laboratory by:**	**Lab Ref. No:** 378301
Send results to:	Douglas Partners Pty Ltd		**Received by:** Katy Wayne
Address:	96 Hermitage Road, West Ryde NSW 2114	**Phone:** (02) 9809 0666	**Date & Time** 15/4/25 1210
Relinquished by:	JJ	**Date:** 15/3/25 **Signed:**	**Signed:**

Douglas PARTNERS | GROUNDED EXPERTISE

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	86230.01	**Suburb:** St Leonards	**To:** Envirolab Services
Project Manager:	Paul.Gorman		**Dispatch date:** 0/01/1900

	Sample ID			Date Sampled	Sample Type	Container Type	Analytes											Notes/ Preservation/ Additional Requirements
	Location / Other ID	Depth From	Depth To		S - soil W - water M - Material	G - glass P - plastic	Combo 8a	Combo 3a	VOC	pH, CEC	BTEX	Combo 3	Asbestial material					
BH05 15		0.4	0.5	25/03/25	S	G,P	x											
BH05 16		0.9	1	25/03/25	S	G,P		x	x									
BH05-FC 17		1.1		25/03/25	S	P							x					
BH06 18		0.15	0.2	25/03/25	S	G,P												HOLD
BH06 19		0.4	0.5	25/03/25	S	G,P	x		x									
TB/TC 20/	21			25/03/25	S	G					x							
BD1/20250325	22			25/03/25	S	G						x						#378301 15/4 lw

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	86230.01, St Leonards
Envirolab Reference	378301
Date Sample Received	15/04/2025
Date Instructions Received	15/04/2025
Date Results Expected to be Reported	24/04/2025

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	21 Soil, 1 Material
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	VOCs in soil	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Misc Soil - Inorg	Acid Extractable metalsin soil	Asbestos ID - soils	Asbestos ID - materials	Misc Inorg - Soil	CEC	On Hold
BH01-0.15-0.16														✓
BH01-0.28-0.35														✓
BH01-0.5-0.6		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
BH01-0.9-1														✓
BH01-1.4-1.5	✓	✓	✓	✓					✓	✓				
BH01-1.9-2														✓
BH02-0.13-0.2		✓	✓	✓					✓	✓				
BH02-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
BH02-0.9-1														✓
BH03-0.15-0.2														✓
BH03-0.4-0.5		✓	✓	✓	✓	✓	✓	✓	✓	✓				
BH04-0.15-0.2														✓
BH04-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	
BH05-0.15-0.2		✓	✓	✓					✓	✓				
BH05-0.4-0.5		✓	✓	✓	✓	✓	✓	✓	✓	✓				
BH05-0.9-1	✓	✓	✓	✓					✓	✓				
BH05-FC-1.1											✓			
BH06-0.15-0.2														✓
BH06-0.4-0.5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
TB		✓												
TS		✓												
BD1/20250325		✓	✓	✓					✓					

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 378301-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86230.01, St Leonards**
Number of Samples	Additional analysis
Date samples received	15/04/2025
Date completed instructions received	28/04/2025

Analysis Details

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

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

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

Report Details

Date results requested by	05/05/2025
Date of Issue	05/05/2025

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Results Approved By
Giovanni Agosti, Group Technical Manager

Authorised By
Nancy Zhang, Laboratory Manager

Metals from Leaching Fluid pH 2.9 or 5			
Our Reference		378301-A-8	378301-A-19
Your Reference	UNITS	BH02	BH06
Depth		0.4-0.5	0.4-0.5
Date Sampled		25/03/2025	25/03/2025
Type of sample		Soil	Soil
Date extracted	-	01/05/2025	01/05/2025
Date analysed	-	01/05/2025	01/05/2025
pH of soil for fluid# determ.	pH units	9.0	8.9
pH of soil TCLP (after HCl)	pH units	1.9	1.8
Extraction fluid used		1	1
pH of final Leachate	pH units	5.1	5.2
Arsenic	mg/L	[NA]	<0.05
Nickel	mg/L	0.07	0.2

Method ID	Methodology Summary
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using AS 4439. Please note that the mass used may be scaled down from default based on sample mass available. Samples are stored at 2-6oC before and after leachate preparation.
Metals-020	Determination of various metals by ICP-AES following buffer determination as per USEPA 1311 and hence AS 4439.3. Extraction Fluid 1 refers to the pH 5.0 buffer and Extraction Fluid 2 is the pH 2.9 buffer. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.

QUALITY CONTROL: Metals from Leaching Fluid pH 2.9 or 5					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	378301-A-8
Date extracted	-			01/05/2025	[NT]	[NT]	[NT]	[NT]	01/05/2025	01/05/2025
Date analysed	-			01/05/2025	[NT]	[NT]	[NT]	[NT]	01/05/2025	01/05/2025
Arsenic	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	119	[NT]
Nickel	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	101	99

Result Definitions

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

Quality Control Definitions

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

Anna Bui

From: Greta Petzold
Sent: Monday, 28 April 2025 10:38 AM
To: Paul Gorman; Envirolab Sydney Sample Receipt
Subject: RE: Results for Registration 378301 86230.01, St Leonards

No worries, Paul

@Envirolab Sydney Sample Receipt A- job please

ELS ref: 378301-A

TAT: STANDARD

DUE: 5/5/25

AB

Kind Regards,

Greta Petzold | Operations Manager | Envirolab Services

Great Science. Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200
E GPetzold@envirolab.com.au | **W** www.envirolab.com.au

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From: Paul Gorman <paul.gorman@douglaspartners.com.au>
Sent: Monday, 28 April 2025 10:02 AM
To: Greta Petzold <GPetzold@envirolab.com.au>
Subject: RE: Results for Registration 378301 86230.01, St Leonards

Thanks Greta.

Can I please request TCLP testing on a standard turnaround as follows:

8 BH02/0.4-0.5 TCLP nickel
9 BH06/0.4-0.5 TCLP arsenic, nickel

Thanks

Paul Gorman | Principal

02 8878 0632 +61 427 949 878 Paul.Gorman@douglaspartners.com.au

www.douglaspartners.com.au 96 Hermitage Road, West Ryde
NSW 2114 | Wallumedegal Country
PO Box 472, West Ryde, NSW 1685

Douglas PARTNERS | GROUNDED EXPERTISE

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SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	86230.01, St Leonards
Envirolab Reference	378301-A
Date Sample Received	15/04/2025
Date Instructions Received	28/04/2025
Date Results Expected to be Reported	05/05/2025

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	Additional analysis
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	12
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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Sample ID	pH of soil for fluid#determ.	pH of soil TCLP (after HCl)	Extraction fluid used	pH of final Leachate	Arsenic	Nickel	On Hold
BH01-0.15-0.16							✓
BH01-0.28-0.35							✓
BH01-0.5-0.6							✓
BH01-0.9-1							✓
BH01-1.4-1.5							✓
BH01-1.9-2							✓
BH02-0.13-0.2							✓
BH02-0.4-0.5	✓	✓	✓	✓		✓	
BH02-0.9-1							✓
BH03-0.15-0.2							✓
BH03-0.4-0.5							✓
BH04-0.15-0.2							✓
BH04-0.4-0.5							✓
BH05-0.15-0.2							✓
BH05-0.4-0.5							✓
BH05-0.9-1							✓
BH05-FC-1.1							✓
BH06-0.15-0.2							✓
BH06-0.4-0.5	✓	✓	✓	✓	✓	✓	
TB							✓
TS							✓
BD1/20250325							✓
BH02 - [TRIPLICATE]-0.4-0.5							✓
BH06 - [TRIPLICATE]-0.4-0.5							✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

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CERTIFICATE OF ANALYSIS 378866

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**86230.01, St Leonards**
Number of Samples	6 Water
Date samples received	23/04/2025
Date completed instructions received	23/04/2025

Analysis Details

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

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

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

Report Details

Date results requested by	01/05/2025
Date of Issue	01/05/2025

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Results Approved By
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Loren Bardwell, Development Chemist
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in water				
Our Reference	UNITS	378866-1	378866-2	378866-3
Your Reference		BH01	BH03	BH06
Date Sampled		17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water
Date Extracted	-	24/04/2025	24/04/2025	24/04/2025
Date Analysed	-	28/04/2025	28/04/2025	28/04/2025
Dichlorodifluoromethane	µg/L	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1
Chloroform	µg/L	3	32	<1
2,2-dichloropropane	µg/L	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1
Benzene	µg/L	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1
Bromodichloromethane	µg/L	<1	5	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1
Dibromochloromethane	µg/L	<1	1	<1
1,2-dibromoethane	µg/L	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1

VOCs in water				
Our Reference	UNITS	378866-1	378866-2	378866-3
Your Reference		BH01	BH03	BH06
Date Sampled		17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water
Bromoform	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
Styrene	µg/L	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1
o-xylene	µg/L	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	105	106	105
Surrogate Toluene-d8	%	100	100	99
Surrogate 4-Bromofluorobenzene	%	97	98	96

vTRH(C6-C10)/BTEXN in Water						
Our Reference		378866-1	378866-2	378866-3	378866-4	378866-5
Your Reference	UNITS	BH01	BH03	BH06	BD1/250417	TS
Date Sampled		17/04/2025	17/04/2025	17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Date analysed	-	28/04/2025	28/04/2025	28/04/2025	28/04/2025	28/04/2025
TRH C_6 - C_9	µg/L	<10	27	<10	<10	[NA]
TRH C_6 - C_{10}	µg/L	<10	30	<10	<10	[NA]
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	30	<10	<10	[NA]
Benzene	µg/L	<1	<1	<1	<1	117%
Toluene	µg/L	<1	<1	<1	<1	108%
Ethylbenzene	µg/L	<1	<1	<1	<1	105%
m+p-xylene	µg/L	<2	<2	<2	<2	95%
o-xylene	µg/L	<1	<1	<1	<1	118%
Naphthalene	µg/L	<1	<1	<1	<1	[NA]
Surrogate Dibromofluoromethane	%	105	106	105	106	103
Surrogate Toluene-d8	%	100	100	99	100	102
Surrogate 4-Bromofluorobenzene	%	97	98	96	96	101

vTRH(C6-C10)/BTEXN in Water		
Our Reference		378866-6
Your Reference	UNITS	TB
Date Sampled		17/04/2025
Type of sample		Water
Date extracted	-	24/04/2025
Date analysed	-	28/04/2025
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Surrogate Dibromofluoromethane	%	104
Surrogate Toluene-d8	%	100
Surrogate 4-Bromofluorobenzene	%	97

svTRH (C10-C40) in Water					
Our Reference		378866-1	378866-2	378866-3	378866-4
Your Reference	UNITS	BH01	BH03	BH06	BD1/250417
Date Sampled		17/04/2025	17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water	Water
Date extracted	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Date analysed	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50
Surrogate o-Terphenyl	%	106	102	119	117

PAHs in Water					
Our Reference		378866-1	378866-2	378866-3	378866-4
Your Reference	UNITS	BH01	BH03	BH06	BD1/250417
Date Sampled		17/04/2025	17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water	Water
Date extracted	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Date analysed	-	29/04/2025	29/04/2025	29/04/2025	29/04/2025
Naphthalene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	124	115	108	127

Organochlorine Pesticides in Water					
Our Reference	UNITS	378866-1	378866-2	378866-3	378866-4
Your Reference		BH01	BH03	BH06	BD1/250417
Date Sampled		17/04/2025	17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water	Water
Date extracted	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Date analysed	-	29/04/2025	29/04/2025	29/04/2025	29/04/2025
alpha-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
HCB	µg/L	<0.2	<0.2	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2	<0.2	<0.2
Mirex	ug/L	<0.2	<0.2	<0.2	<0.2
Surrogate 4-Chloro-3-NBTF	%	114	110	107	115

OP Pesticides in Water					
Our Reference	UNITS	378866-1	378866-2	378866-3	378866-4
Your Reference		BH01	BH03	BH06	BD1/250417
Date Sampled		17/04/2025	17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water	Water
Date extracted	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Date analysed	-	29/04/2025	29/04/2025	29/04/2025	29/04/2025
Dichlorvos	µg/L	<0.2	<0.2	<0.2	<0.2
Mevinphos	µg/L	<0.2	<0.2	<0.2	<0.2
Phorate	µg/L	<0.2	<0.2	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2	<0.2	<0.2
Disulfoton	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion-Methyl	µg/L	<0.2	<0.2	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2	<0.2	<0.2
Fenthion	µg/L	<0.2	<0.2	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2	<0.2	<0.2
Methidathion	µg/L	<0.2	<0.2	<0.2	<0.2
Fenamiphos	µg/L	<0.2	<0.2	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2	<0.2	<0.2
Phosalone	µg/L	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2	<0.2	<0.2
Coumaphos	µg/L	<0.2	<0.2	<0.2	<0.2
Surrogate 4-Chloro-3-NBTF	%	114	110	107	115

PCBs in Water					
Our Reference		378866-1	378866-2	378866-3	378866-4
Your Reference	UNITS	BH01	BH03	BH06	BD1/250417
Date Sampled		17/04/2025	17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water	Water
Date extracted	-	24/04/2025	24/04/2025	24/04/2025	24/04/2025
Date analysed	-	29/04/2025	29/04/2025	29/04/2025	29/04/2025
Aroclor 1016	µg/L	<2	<2	<2	<2
Aroclor 1221	µg/L	<2	<2	<2	<2
Aroclor 1232	µg/L	<2	<2	<2	<2
Aroclor 1242	µg/L	<2	<2	<2	<2
Aroclor 1248	µg/L	<2	<2	<2	<2
Aroclor 1254	µg/L	<2	<2	<2	<2
Aroclor 1260	µg/L	<2	<2	<2	<2
Surrogate 2-Fluorobiphenyl	%	112	110	104	114

HM in water - total					
Our Reference	UNITS	378866-1	378866-2	378866-3	378866-4
Your Reference		BH01	BH03	BH06	BD1/250417
Date Sampled		17/04/2025	17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water	Water
Date prepared	-	28/04/2025	28/04/2025	28/04/2025	28/04/2025
Date analysed	-	28/04/2025	28/04/2025	28/04/2025	28/04/2025
Arsenic-Total	µg/L	3	6	5	6
Cadmium-Total	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium-Total	µg/L	<1	2	9	11
Copper-Total	µg/L	13	24	36	33
Lead-Total	µg/L	2	2	8	10
Mercury-Total	µg/L	<0.05	<0.05	<0.05	<0.05
Nickel-Total	µg/L	130	22	28	33
Zinc-Total	µg/L	270	59	110	100

HM in water - dissolved				
Our Reference	UNITS	378866-1	378866-2	378866-3
Your Reference		BH01	BH03	BH06
Date Sampled		17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water
Date prepared	-	24/04/2025	24/04/2025	24/04/2025
Date analysed	-	24/04/2025	24/04/2025	24/04/2025
Arsenic-Dissolved	µg/L	<1	2	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	3	<1	3
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	100	17	15
Zinc-Dissolved	µg/L	120	28	41

Metals in Waters - Acid extractable				
Our Reference		378866-1	378866-2	378866-3
Your Reference	UNITS	BH01	BH03	BH06
Date Sampled		17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water
Date prepared	-	24/04/2025	24/04/2025	24/04/2025
Date analysed	-	28/04/2025	28/04/2025	28/04/2025
Phosphorus - Total	mg/L	<0.05	0.06	2.9

Miscellaneous Inorganics				
Our Reference		378866-1	378866-2	378866-3
Your Reference	UNITS	BH01	BH03	BH06
Date Sampled		17/04/2025	17/04/2025	17/04/2025
Type of sample		Water	Water	Water
Date prepared	-	23/04/2025	23/04/2025	23/04/2025
Date analysed	-	23/04/2025	23/04/2025	23/04/2025
pH	pH Units	5.3	6.7	6.3
Oil & Grease (LLE)	mg/L	16	<5	7
Sulphate, SO4	mg/L	120	55	71
Chloride, Cl	mg/L	250	56	66
Ammonia as N in water	mg/L	0.012	<0.005	0.012
Nitrate as N in water	mg/L	<0.005	<0.005	<0.005
Nitrite as N in water	mg/L	<0.005	<0.005	<0.005
NOx as N in water	mg/L	<0.005	<0.005	<0.005
Total Nitrogen in water	mg/L	0.1	0.3	0.1
TKN in water	mg/L	0.1	0.3	0.1
Organic Nitrogen as N	mg/L	<0.2	0.3	<0.2
Phosphate as P in water	mg/L	<0.005	<0.005	0.01

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-003	Oil & Grease - determine gravimetrically following extraction with Hexane, in accordance with APHA latest edition, 5520-B.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055	Nitrite - determined colourimetrically based on APHA latest edition NO2- B. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Inorg-060	Phosphate determined colourimetrically based on EPA365.1 and APHA latest edition 4500 P E. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-062	TKN - determined colourimetrically based on APHA latest edition 4500 Norg. Alternatively, TKN can be derived from calculation (Total N - NOx).
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES. Total Phosphate determined stochiometrically from Phosphorus (assumed to be present as Phosphate). Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-021/022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD and/or GC-MS/GC-MSMS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date Extracted	-			24/04/2025	1	24/04/2025	28/04/2025		24/04/2025	[NT]
Date Analysed	-			28/04/2025	1	28/04/2025	29/04/2025		28/04/2025	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	96	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	3	3	0	99	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	98	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	97	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	97	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	108	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	109	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	97	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	117	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	98	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	97	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	98	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	98	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	103	1	105	102	3	102	[NT]
Surrogate Toluene-d8	%		Org-023	99	1	100	97	3	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	95	1	97	95	2	100	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			24/04/2025	1	24/04/2025	28/04/2025		24/04/2025	[NT]
Date analysed	-			28/04/2025	1	28/04/2025	29/04/2025		28/04/2025	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	97	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	97	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	97	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	97	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	97	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	98	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	98	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	103	1	105	102	3	102	[NT]
Surrogate Toluene-d8	%		Org-023	99	1	100	97	3	101	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	95	1	97	95	2	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			24/04/2025	[NT]	[NT]	[NT]	[NT]	24/04/2025	[NT]
Date analysed	-			24/04/2025	[NT]	[NT]	[NT]	[NT]	24/04/2025	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	119	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	123	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	119	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	123	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	120	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			24/04/2025	[NT]	[NT]	[NT]	[NT]	24/04/2025	[NT]
Date analysed	-			29/04/2025	[NT]	[NT]	[NT]	[NT]	29/04/2025	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	69	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	69	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	77	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	69	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	109	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: Organochlorine Pesticides in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			24/04/2025	[NT]	[NT]	[NT]	[NT]	24/04/2025	[NT]
Date analysed	-			29/04/2025	[NT]	[NT]	[NT]	[NT]	29/04/2025	[NT]
alpha-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
HCB	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
gamma-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
delta-BHC	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	89	[NT]
gamma-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Dieldrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	86	[NT]
Endrin	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
Endosulfan II	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Endrin Aldehyde	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Methoxychlor	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Mirex	ug/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	97	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: OP Pesticides in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			24/04/2025	[NT]	[NT]	[NT]	[NT]	24/04/2025	[NT]
Date analysed	-			29/04/2025	[NT]	[NT]	[NT]	[NT]	29/04/2025	[NT]
Dichlorvos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
Mevinphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phorate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethoate	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Disulfoton	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion-Methyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	74	[NT]
Fenitrothion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	79	[NT]
Malathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Chlorpyriphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
Fenthion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Bromophos ethyl	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methidathion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fenamiphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	74	[NT]
Phosalone	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Coumaphos	µg/L	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	97	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: PCBs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			24/04/2025	[NT]	[NT]	[NT]	[NT]	24/04/2025	[NT]
Date analysed	-			29/04/2025	[NT]	[NT]	[NT]	[NT]	29/04/2025	[NT]
Aroclor 1016	µg/L	2	Org-021/022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-021/022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-021/022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-021/022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-021/022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-021/022/025	<2	[NT]	[NT]	[NT]	[NT]	79	[NT]
Aroclor 1260	µg/L	2	Org-021/022/025	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	91	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: HM in water - total						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	378866-3
Date prepared	-			24/04/2025	1	28/04/2025	28/04/2025		28/04/2025	28/04/2025
Date analysed	-			28/04/2025	1	28/04/2025	28/04/2025		28/04/2025	28/04/2025
Arsenic-Total	µg/L	1	Metals-022	<1	1	3	3	0	98	91
Cadmium-Total	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	95	96
Chromium-Total	µg/L	1	Metals-022	<1	1	<1	<1	0	99	102
Copper-Total	µg/L	1	Metals-022	<1	1	13	13	0	101	99
Lead-Total	µg/L	1	Metals-022	<1	1	2	2	0	99	94
Mercury-Total	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		120	[NT]
Nickel-Total	µg/L	1	Metals-022	<1	1	130	130	0	101	102
Zinc-Total	µg/L	1	Metals-022	<1	1	270	270	0	95	94

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	378866-2
Date prepared	-			24/04/2025	1	24/04/2025	24/04/2025		24/04/2025	24/04/2025
Date analysed	-			24/04/2025	1	24/04/2025	24/04/2025		24/04/2025	24/04/2025
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	89	94
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	86	88
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	87	90
Copper-Dissolved	µg/L	1	Metals-022	<1	1	3	3	0	89	92
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	92	89
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	[NT]		107	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	100	98	2	88	92
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	120	120	0	87	94

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	24/04/2025	24/04/2025		[NT]	[NT]
Date analysed	-			[NT]	3	24/04/2025	24/04/2025		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	3	<0.1	[NT]		[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	3	3	[NT]		[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	3	<1	[NT]		[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	3	<0.05	<0.05	0	[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	3	15	[NT]		[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	3	41	[NT]		[NT]	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	378866-2
Date prepared	-			24/04/2025	1	24/04/2025	24/04/2025		24/04/2025	24/04/2025
Date analysed	-			28/04/2025	1	28/04/2025	28/04/2025		28/04/2025	28/04/2025
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	1	<0.05	<0.05	0	107	115

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	378866-3
Date prepared	-			23/04/2025	1	23/04/2025	23/04/2025		23/04/2025	23/04/2025
Date analysed	-			23/04/2025	1	23/04/2025	23/04/2025		23/04/2025	23/04/2025
pH	pH Units		Inorg-001	[NT]	1	5.3	5.2	2	101	[NT]
Oil & Grease (LLE)	mg/L	5	Inorg-003	<5	1	16	[NT]		80	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	1	120	[NT]		105	73
Chloride, Cl	mg/L	1	Inorg-081	<1	1	250	[NT]		98	72
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	1	0.012	[NT]		92	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		102	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		101	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	<0.005	1	<0.005	[NT]		102	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	1	0.1	0.1	0	120	122
TKN in water	mg/L	0.1	Inorg-062	<0.1	1	0.1	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	<0.2	1	<0.2	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	<0.005	1	<0.005	[NT]		93	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	3	23/04/2025	23/04/2025		[NT]	[NT]
Date analysed	-			[NT]	3	23/04/2025	23/04/2025		[NT]	[NT]
pH	pH Units		Inorg-001	[NT]	3	6.3	[NT]		[NT]	[NT]
Oil & Grease (LLE)	mg/L	5	Inorg-003	[NT]	3	7	[NT]		[NT]	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	[NT]	3	71	[NT]		[NT]	[NT]
Chloride, Cl	mg/L	1	Inorg-081	[NT]	3	66	[NT]		[NT]	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	[NT]	3	0.012	0.016	29	[NT]	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	[NT]	3	<0.005	<0.005	0	[NT]	[NT]
Nitrite as N in water	mg/L	0.005	Inorg-055	[NT]	3	<0.005	<0.005	0	[NT]	[NT]
NOx as N in water	mg/L	0.005	Inorg-055	[NT]	3	<0.005	0.005	0	[NT]	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	[NT]	3	0.1	[NT]		[NT]	[NT]
TKN in water	mg/L	0.1	Inorg-062	[NT]	3	0.1	[NT]		[NT]	[NT]
Organic Nitrogen as N	mg/L	0.2	Inorg-055/062/127	[NT]	3	<0.2	[NT]		[NT]	[NT]
Phosphate as P in water	mg/L	0.005	Inorg-060	[NT]	3	0.01	0.01	0	[NT]	[NT]

Result Definitions

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

Quality Control Definitions

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

CHAIN OF CUSTODY DESPATCH SHEET

Douglas PARTNERS

Project No:	86230.01	**Suburb:**	St Leonards	**To:**	Envirolab Services
Project Manager:	Alex Gibson / Paul Gorman	**Order Number:**		**Sampler:** ZW	12 Ashley St, Chatswood NSW 2067
Email:	Paul.Gorman@douglaspartners.com.au			**Attn:**	Sample Receipt
Turnaround time	☑ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day				(02) 9910 6200 samplereceipt@envirolab.cor
Prior Storage	☐ Fridge ☐ Freezer ☐ Esky ☐ Shelf	**Do samples contain 'potential' HBM?**	☐ No ☐ Yes (If YES, handle, transport, store in accordance with FPM HAZID)		

Lab ID	Sample ID: Location / Other ID	Depth From	Depth To	Date Sampled	Sample Type: S - soil W - water M - Material	Container Type: G - glass P - plastic	Analytes: Combo 6*	8 HM ** (dissolved)	VOC	pH	oil & grease	sulfate	chloride	nutrient suite	BTEX			Notes/ Preservation/ Additional Requirements
1	BH01			17.04.25	W	G/P	X	X	X	X	X	X	X	X				* total metals, low level
2	BH03			17.04.25	W	G/P	X	X	X	X	X	X	X	X				** low level
3	BH06			17.04.25	W	G/P	X	X	X	X	X	X	X	X				
4	BD1/250417				W	G/P	X											
5	TS														X			
6	TB														X			

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

Job No: 378866
Date Received: 23/4/25
Time Received: 1300
Received By: ST
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Metals to analyse:			
Number of samples in container:		**Transported to laboratory by:**	
Send results to:	Douglas Partners Pty Ltd		
Address:	96 Hermitage Road, West Ryde NSW 2114	**Phone:** (02) 9809 0666	
Relinquished by:		**Date:**	**Signed:**

LAB RECEIPT

Lab Ref. No:	378866
Received by:	Shann ToC
Date & Tim	23/4/25 1300
Signed:	ST

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Paul Gorman

Sample Login Details

Your reference	86230.01, St Leonards
Envirolab Reference	378866
Date Sample Received	23/04/2025
Date Instructions Received	23/04/2025
Date Results Expected to be Reported	01/05/2025

Sample Condition

Samples received in appropriate condition for analysis	Holding time exceedance
No. of Samples Provided	6 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Please contact the laboratory within 24 hours if you wish to cancel the aformentioned testing. Otherwise testing will proceed as per the COC and hence invoiced accordingly.

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Organochlorine Pesticides in Water	OP Pesticides in Water	PCBs in Water	HM in water - total	HM in water - dissolved	Metals in Waters -Acid extractable	pH	Oil & Grease (LLE)	Sulphate, SO4	Chloride, Cl	Ammonia as N in water	Nitrate as N in water	Nitrite as N in water	NOx as N in water	Total Nitrogen in water	TKN in water	Organic Nitrogen as N	Phosphate as P in water
BH01	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH03	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BH06	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BD1/250417		✓	✓	✓	✓	✓	✓	✓														
TS		✓																				
TB		✓																				

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Appendix I

Quality Assurance and Quality Control

Table QA1: Relative Percentage Difference Results – Soil Sampling

Lab Report No	Sample ID	Depth	Sample Date	Sample Type	Units	Priority metals						
						Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel
378301	BH01	0.5 - 0.6 m	25/03/25	Soil	mg/kg	**6**	**0.9**	**6**	**41**	**18**	<0.1	**45**
378301	BD1/20250325	0 m	25/03/25	Soil	mg/kg	**5**	**0.6**	**7**	**41**	**15**	<0.1	**51**
			Difference		mg/kg	1	0.3	1	0	3	0	6
			RPD		%	18%	**40%**	15%	0%	18%	0%	13%

Table QA1: Relative Percentage Difference Results – Soil Sampling

Lab Report No	Sample ID		Priority PAH				PA					
		Zinc	Naphthalene [b]	Benzo(a)pyrene (B(a)P)	Benzo(a)pyrene TEQ (B(a)P TEQ)	Total PAH	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(g,h,i)perylene	Chrysene
378301	BH01	**370**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
378301	BD1/20250325	**260**	<1	<0.05	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
		110	0	0	0	0	0	0	0	0	0	0
		35%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table QA1: Relative Percentage Difference Results – Soil Sampling

Lab Report No	Sample ID	AH						Priority TRH				
		Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	TRH C6 - C10	TRH >C10-C16	F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)
378301	BH01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100
378301	BD1/20250325	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<25	<50	<100
		0	0	0	0	0	0	0	0	0	0	0
		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table QA1: Relative Percentage Difference Results – Soil Sampling

Lab Report No	Sample ID		TRH		BTEX				ditional PhysChem
		F4 (>C34-C40)	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Moisture
378301	BH01	<100	<25	<50	<0.2	<0.5	<1	<1	**130,000**
378301	BD1/20250325	<100	<25	<50	<0.2	<0.5	<1	<1	**140,000**
		0	0	0	0	0	0	0	10,000
		0%	0%	0%	0%	0%	0%	0%	7%

Table QA2: Trip Blank Results - Soil Sampling

Sample ID	Sample Date	Media Being Sampled	Sample Type	Units	BTEX				Lab Report No
					Benzene	Toluene	Ethylbenzene	Total Xylenes	
TB	25/03/25	Soil	Soil	mg/kg	<0.2	<0.5	<1	<1	378301

Table QA3: Trip Spike Results – Soil Sampling (% Recovery)

Sample ID	Sample Date	Media Being Sampled	Sample Type	Benzene	Toluene	Ethylbenzene	o-Xylene	m+p-Xylene	Lab Report No
TS	25/03/25	Soil	Soil	88	87	88	88	89	378301

Table QA1W: Relative Percentage Difference Results – Water Sampling

Lab Report No	Sample ID	Sample Date	Sample Type	Units	Metals & Metalloids							
					Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc
378866	BH06	17/04/25	Water	µg/L	**5**	<0.1	**9**	**36**	**8**	<0.05	**28**	**110**
378866	BD1/250417	17/04/25	Water	µg/L	**6**	<0.1	**11**	**33**	**10**	<0.05	**33**	**100**
		Difference		µg/L	1	0	2	3	2	0	5	10
		RPD		%	18%	0%	20%	9%	22%	0%	16%	10%

Table QA1W: Relative Percentage Difference Results – Water Sampling

Lab Report No	Sample ID	Sample Date	TRH				BTEX						PAH		
			F1 ((C6-C10)-BTEX)	F2 (>C10-C16 less Naphthalene)	F3 (>C16-C34)	F4 (>C34-C40)	Benzene	Toluene	Ethylbenzene	o-Xylene	m+p-Xylene	Total Xylenes	Acenaphthene	Acenaphthylene	Anthracene
378866	BH06	17/04/25	<10	<50	<100	<100	<1	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1
378866	BD1/250417	17/04/25	<10	<50	<100	<100	<1	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1
		Difference	0	0	0	0	0	0	0	0	0	0	0	0	0
		RPD	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table QA1W: Relative Percentage Difference Results – Water Sampling

Lab Report No	Sample ID	Sample Date	PAH												
			Benzo(a)anthracene	Naphthalene	Benzo(a)pyrene (B(a)P)	Benzo(b,j+k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Sum of detected PAH
378866	BH06	17/04/25	<0.1	<1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
378866	BD1/250417	17/04/25	<0.1	<1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
		Difference	0	0	0	0	0	0	0	0	0	0	0	0	0
		RPD	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table QA1W: Relative Percentage Difference Results – Water Sampling

Lab Report No	Sample ID	Sample Date	OCP												
			DDE	DDT	DDD	Aldrin	Dieldrin	Aldrin + Dieldrin (calculated)	alpha-chlordane	gamma-Chlordane	Endosulfan I	Endosulfan II	Endosulfan Sulphate	Endrin	Endrin Aldehyde
378866	BH06	17/04/25	<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
378866	BD1/250417	17/04/25	<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
		Difference	0	0	0	0	0	0	0	0	0	0	0	0	0
		RPD	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table QA1W: Relative Percentage Difference Results – Water Sampling

Lab Report No	Sample ID	Sample Date	OCP										OPP	
			Heptachlor	Heptachlor Epoxide	Hexachlorobenzene	Methoxychlor	Mirex	alpha-BHC	beta-BHC	delta-BHC	Lindane	Sum of detected OCP	Azinphos methyl (Guthion)	Bromophos-ethyl
378866	BH06	17/04/25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
378866	BD1/250417	17/04/25	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
		Difference	0	0	0	0	0	0	0	0	0	0	0	0
		RPD	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table QA1W: Relative Percentage Difference Results – Water Sampling

Lab Report No	Sample ID	Sample Date	OPP													
			Chlorpyrifos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Ronnel (fenchlorphos)	Fenitrothion	Fenthion	Malathion	Parathion	Parathion-methyl	Methidathion	Fenamiphos
378866	BH06	17/04/25	<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
378866	BD1/250417	17/04/25	<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
		Difference	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		RPD	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table QA1W: Relative Percentage Difference Results – Water Sampling

Lab Report No	Sample ID	Sample Date	OPP	PCB							
			Sum of detected OPP	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Aroclor 1260	Sum of detected PCB
378866	BH06	17/04/25	<0.2	<2	<2	<2	<2	<2	<2	<2	<2
378866	BD1/250417	17/04/25	<0.2	<2	<2	<2	<2	<2	<2	<2	<2
		Difference	0	0	0	0	0	0	0	0	0
		RPD	0%	0%	0%	0%	0%	0%	0%	0%	0%

Table QA2W: Trip Blank Results - Water Sampling

Sample ID	Sample Date	Media Being Sampled	Sample Type	Units	BTEX						Lab Report No
					Benzene	Toluene	Ethylbenzene	o-Xylene	m+p-Xylene	Total Xylenes	
TB	17/04/25	Water	Water	µg/L	<1	<1	<1	<1	<2	<1	378866

Table QA3W: Trip Spike Results – Water Sampling (% Recovery)

Sample ID	Sample Date	Media Being Sampled	Sample Type	Benzene	Toluene	Ethylbenzene	o-Xylene	m+p-Xylene	Lab Report No
TS	17/04/25	Water	Water	117	108	105	118	95	378866