
Report on Detailed Site Investigation

Proposed Redevelopment

105-153 Miller Street, North Sydney NSW

Prepared for Investa

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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

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Report on Detailed Site Investigation Proposed Redevelopment 105-153 Miller Street, North Sydney NSW

1. Introduction

Douglas Partners Pty Ltd (Douglas) has been engaged by Investa to prepare this Detailed Site Investigation (DSI) for a proposed redevelopment at 105-153 Miller Street, North Sydney (the site). The site is shown on Drawing 1, Appendix A.

This investigation has been conducted concurrently with a geotechnical investigation (Douglas, 2024).

The objective of the DSI is to assess the suitability of the site for the proposed redevelopment and whether further investigation and / or management is required.

The overall development is a mix-use commercial (retail) / tertiary education. The scope of works for this report pertains to the State Significant Development Application (SSDA) for the tertiary education use.

This report must be read in conjunction with all appendices including the notes provided in Appendix B.

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); and
- NSW EPA *Guidelines for Consultants Reporting on Contaminated Land* (NSW EPA, 2020).

2. Proposed development

It is understood the proposed development involves the redevelopment and adaptive reuse of an existing heritage building at 105 Miller Street as a new mix use commercial (retail) / tertiary education institution.

Specifically, it will include:

- Adaptive reuse and restoration of the existing Miller Street wing;
- Demolition of the Denison Street wing and construction of a new 22 storey building;
- Adaptive reuse to the ground level to deliver a significantly enhanced public domain;
- Construction of a double height ground floor retail / tertiary education and the delivery of a public open space along Miller Street; and
- Basement carparking and loading dock accessed from a relocated entry off Denison Street.

No excavation or dewatering is proposed as part of the development.

3. Scope of work

The scope of works for this investigation comprised:

- A review of the preliminary site investigation (PSI) report prepared by Douglas (Douglas, 2019), extracting information considered relevant to this DSI;
- A site walkover by an environmental scientist to observe site features and activities to assess the potential for contamination at the site from present or past land uses;
- Opportunistic sampling of the two geotechnical boreholes;
- Drilling and sampling from 10 environmental boreholes by means of a hand auger to a maximum depth of 0.55 m upon refusal on sandstone;
- Installation of three soil vapour pins using a hand-held rotary hammer drill;
- Collection of vapour samples into laboratory prepared vacuum canisters;
- Development and sampling of two groundwater monitoring wells constructed as part of the geotechnical investigation;
- Dispatch of selected soil, groundwater and vapour samples to a National Association of Testing Authorities (NATA) accredited laboratory for a combination of the identified contaminants of concern; and
- Preparation of this DSI report.

4. Site information

4.1 Site information

Site address	105-153 Miller Street, North Sydney NSW
Legal description	Lot 2, D.P. 792740
Area	6640 m ²
Zoning	Zone E2 Commercial Centre
Local Council Area	North Sydney Council
Current use	Commercial
Surrounding uses	North – Metro Station / commercial East – Denison Street then commercial South – Pacific Highway then Commercial West – Miller Street then commercial

The site boundary is shown on Drawing 1.

4.2 Site features

Based on the provided site plans (Drawing 2 and Drawing 3) and a site walkover undertaken by an environmental scientist from Douglas on the 15 August 2024. The following key site features pertinent to the contamination report were observed:

- The site layout appeared to have remained unchanged from the floor plans;
- A lower ground carpark level was located above a basement level;
- A former printing room was located in the carpark level;
- A boiler room was located in the basement;
- A diesel generator room was located adjacent to the boiler room;
- An above-ground storage tank (AST) was located within the diesel generator room. No signs of above-ground pipework were observed, indicating the potential for below ground pipework connecting the tank to the former generator and a remote fill point;
- A second AST labelled 'oil tank' on the site plans was present in the basement at coordinates A10-A11. The site inspection identified site signage indicating it was for diesel storage. This AST was raised above the ground and encased in concrete. No signs of above-ground pipework were observed, indicating the potential for below ground pipework connecting the tank to the former generator (possible in the diesel generator room), and possibly a remote fill point (if not filled directly). The dip stick indicated that the tank did not contain a significant volume of liquid; and
- No solvent storage room was identified within the basement or the lower ground floor.

5. Environmental setting

5.1 Topography

The site is at an elevation of 60 m to 64 m relative to Australian Height Datum (AHD), and slopes gently downwards to the east and southeast.

5.2 Site geology

According to the Sydney 1:100,000 Geology Sheet, the site is underlain by Hawkesbury Sandstone, which comprises medium to coarse grained quartz sandstone, very minor shale and laminate lenses.

According to the Sydney 1:100,000 Soils Landscape Sheet, the site is located within the GyMEA erosional soil landscape which has high soil erosion hazard, localised steep slopes, shallow highly permeable soil and very low soil fertility.

5.3 Acid sulfate soils

According to NSW Acid Sulfate Soils Risk mapping data from NSW Department of Environment and Climate Change (1994 - 1998), the site is not located within or near an area associated with a risk of acid sulfate soils.

5.4 Surface water and groundwater

The nearest surface water body is Sydney Harbour which is located approximately 1 km to the south and east of the site. Surface water is anticipated to enter the local stormwater system along Denison Street, and to discharge to Sydney Harbour.

A search of the publicly available registered groundwater bore database indicated that there is one registered groundwater bore within 500 m of the site. The groundwater bore details are summarised in Table 1.

Table 1: Summary of available information from nearby registered groundwater bores

Bore ID	Authorised purpose	Completion year	Status	Location relative to site	Final depth (m)	Standing water level (m bgl)
GW107764	Domestic bore	2007	Converted	430 m north	-	-

Based on the regional topography the anticipated natural flow direction of groundwater beneath the site is inferred to be to the southeast, towards Sydney Harbour, the likely receiving surface water body for the groundwater flow path. However, given the presence of various drained deep basements in North Sydney, the local groundwater flow direction may vary from that inferred.

Given the local geology (i.e. - Hawkesbury Sandstone), the groundwater in the fractured rock beneath the site is anticipated to be relatively fresh.

Accordingly, potential beneficial uses could include irrigation or drinking water, although the future use of the groundwater for these purposes in the vicinity of the site is considered unlikely given the urban setting.

6. Previous investigation (Douglas 2019) and site history

The PSI comprised a desktop review of site information and readily available site history. No intrusive soil or groundwater investigation was conducted as part of the investigation.

The PSI recorded that the site was used for residential purposes, before the existing commercial building on site was built in 1957, and the surrounding areas have been used for commercial purposes since at least the 1980s. The PSI included a search of the public databases, which indicated that the site was not listed as a contaminated site under the Contaminated Land Management (CLM) Act 1997. A search of the database held by SafeWork NSW for the PSI did not locate any records pertaining to the storage of dangerous goods at the site.

A review of the PSI identified some potentially contaminating business activities on-site, and immediately up-gradient of the site including dry-cleaning activities (on / off-site), motor garage (on-site), solvent storage for general cleaning purposes (on-site), use of a diesel generator for emergency power (on-site), and other off-site potentially contaminating business activities adjacent to the site included boat builders, plastic and chemical manufactures, diesel engine manufacturers and ship builders.

Further assessment pertaining to the potentially contaminating business activities recorded for the site in the PSI was conducted as part of this DSI and identified the following:

On-site activities

- Former dry-cleaning activities:
 - o The previous cadastral record enquiry report identified an on-site dry cleaner was present within the site boundary from 1950-1953;
 - o The previous historical aerials show that the current building was constructed between 1955 and 1965 and included the excavation of the current (3-metres) basement; and
 - o Previous historic business directories identified an on-site dry cleaner was present within the site between 1971-1984. Further assessment as part of the current investigation identified that the business address was 72 Mount Street. Though the exact location is unknown it may have been located on the southern side of the site along Mount Street.
- Former garage:
 - o The historic business directories identified a motor garage and engineer business on site. Current investigation identified that the company associated with the motor garage and engineers' business to be conducting merchant business activity relating to accounting, finance and administrative works indicating that contamination like business activities were not being conducted on-site.
- Former solvent storage:
 - o The solvent's storage room for general cleaning purposes were located at roof level and they were stored in plastic tub bunds.
- Diesel generator:
 - o The diesel generator room contained two above ground diesel tanks. Though only one diesel tank was identified during the site walkover the second tank was not identified, and its potential removal cannot be verified; and
 - o One above ground diesel tank was located east of the diesel generator room.

Off-site activities

- Off-site dry cleaners were located at 96 and 100 Miller Street, North Sydney up-gradient to the site; and
- The businesses pertaining to boat building, plastic and chemical manufacturing and diesel engine manufacturing were listed on the historical business directories to be conducting merchant and distribution activities.

A preliminary conceptual site model (CSM) was developed based on the desktop assessment and is presented in Section 7.

On the basis of the CSM and the desktop assessment, it was concluded that the site could be made suitable for the proposed development, from a contamination standpoint subject to the following recommendations:

- Completion of a detailed site investigation (DSI) complying with SEPP55 [which has been superseded by State Environmental Planning Policy (Resilience and Hazards) 2021], including intrusive sampling of soil and groundwater;

- A hazardous building materials assessment is required for the existing buildings;
- Post-demolition inspection of the building footprints by an Environmental Consultant, for any signs of contamination (if required). Additional sampling and testing in these areas will be required to fill data gaps; and
- Any soil to be removed offsite as part of the construction is subject to a formal waste classification prior to disposal.

7. Preliminary conceptual site model

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination either in the present or the future i.e. it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

Based on the previous report, the following potential sources of contamination and associated contaminants of potential concern (CoPC) have been identified and summarised in Table 2.

Table 2: Summary of potential sources

Potential sources and associated CoPC
On-site sources
S1: Fill: Associated with levelling, demolition of former buildings on the site CoPC: metals, total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), organochlorine pesticides (OCP), phenols and asbestos. S2: Historic and current site uses (Former on-site dry cleaners, existing above ground diesel / oil tanks and storage of solvents). CoPC: metals, trichloroethene (TCE), tetrachloroethene (PCE), TRH, BTEX, PAH, OCP, PCB, phenols and volatile organic compounds (VOC). S3: Existing and Former buildings CoPC: asbestos, synthetic mineral fibres (SMF), lead (in paint) and PCB.
Off-site sources
S4: Historic and current site uses [dry cleaner (up-gradient), mechanics, motor garages, plastic and chemical manufacturers / distributors (note, actual activities not known and may have been mainly administrative)]. CoPC: metals, TCE, PCE, VOC, TRH, BTEX, PAH, OCP, OPP, PCB and phenols.

Given the location of the site is in a commercial precinct and the majority of the site is covered in hardstand, the risk of ecological impact on terrestrial ecology is considered to be low and not further considered herein. The following potential human and environmental receptors, along with relevant potential pathways, have been identified and summarised in Table 3.

Table 3: Summary of potential receptors and pathways

Potential human receptors
HR1: Current users [commercial] HR2: Construction and maintenance workers HR3: End users [commercial (retail) / tertiary education] HR4: Adjacent site users [commercial]
Potential environmental receptors
ERI: Groundwater
Potential pathways to human receptors
HP1: Ingestion and dermal contact HP2: Inhalation of dust and / or vapours
Potential pathways to environmental receptors
EPI: Leaching of contaminants and vertical migration into groundwater

7.1 Summary of potentially complete exposure pathways

A 'source–pathway–receptor' approach has been used to assess the potential risks of harm being caused to human or environmental receptors from contamination sources on or in the vicinity of the site, via exposure pathways (potential complete pathways). The possible pathways between the above sources (S1 to S4) and receptors are provided in below Table 4.

Table 4: Summary of potentially complete exposure pathways

Source and CoPC	Exposure pathway	Receptor	Risk management action
S1: Fill: metals, TRH, BTEX, PAH, PCB, OCP, phenols and asbestos S3: Former and degradation of existing buildings on-site: asbestos, lead in paint, PCBs, SMF	HP1: Ingestion and dermal contact HP2: Inhalation of dust and / or vapours EPI: Lateral migration of groundwater providing base flow to water bodies	HR1: Current users [commercial] HR2: Construction and maintenance workers HR3: End users [commercial (retail) / tertiary education] ERI: Groundwater	An intrusive investigation is recommended to assess possible contamination including testing of the soils and groundwater A hazardous building materials assessment is required for the existing buildings. Hazardous materials, if present, will need to be removed in

Source and CoPC	Exposure pathway	Receptor	Risk management action
			accordance with relevant legislation and guidelines prior to demolition and managed appropriately the interim or where buildings are to be retained.
S2: Historic and current site uses S4: Historic and current adjacent and offsite site uses Metals, TCE, PCE, VOC, TRH, BTEX, PAH, OCP, OPP, PCB and phenols.	HP1: Ingestion and dermal contact HP2: Inhalation of dust and / or vapours	HR1: Current users [commercial] HR2: Construction and maintenance workers HR3: End users [commercial (retail) / tertiary education]	An intrusive investigation is recommended to assess possible contamination issues including chemical testing of the soils, soil vapour and groundwater.
	EPI: Lateral migration of groundwater providing base flow to water bodies	ERI: Groundwater	

8. Sampling and analysis plan

8.1 Data quality objectives

The DSI was devised 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 C.

8.2 Soil sampling and analysis rationale

Based on the CSM and data quality objectives (DQO) the following sampling rationale was adopted.

A systematic sampling strategy based on NSW EPA *Contaminated Sites, Sampling Design Guidelines* (NSW EPA, 2022) to determine borehole locations which was adapted based on areas of access. Borehole locations are shown on Drawing D.002 and Drawing D.003, in Appendix A.

Table 2 of NSW EPA (2022) recommends a minimum of 16 grid-based sampling points for a site of approximately 6600 m² (0.66 ha) for site characterisation based on the detection of circular hot spots using a systemic grid sampling pattern. A total of 10 test locations were positioned across accessible areas of the site for environmental boreholes, and opportunistic sampling was undertaken from two geotechnical test locations.

The test locations were positioned across site as follows:

- BH102 targeting the diesel tank;
- HA10 targeting the boiler room / diesel generator room (noting drilling within the rooms was not practicable due to high density of utility lines);
- HA03 within vicinity of the previous dry cleaner;
- HA08 and HA09 beneath the general area of the former printing shop;
- HA04, HA05 and HA06 for general coverage of the previous dry cleaner along Mount Street; and
- BH101, HA01, HA02, HA07 and HA09 to assess general fill / site condition in accessible areas of the site.

It is noted that minimum recommended sampling density was not met due to site access constraints. The conclusions and recommendations of this report will consider the implications of the resulting data gaps.

Soil samples were collected from each borehole at depths of approximately 0.3 m and 0.45 m, for all hand augured locations.

The general sampling methods are described in the field work methodology in Appendix D.

Samples were selected for analysis based upon field observations and PID screening results, and to provide lateral and vertical coverage of the site. The selected samples were analysed for the CoPC in the CSM.

8.3 Soil vapour sampling and analysis rationale

In order to assess the current sub-slab soil vapour concentrations at the site and evaluate whether historical, current and off-site land uses have impacted the site, sampling was undertaken from three sub-slab vapour pins.

The location SV2, were positioned to give coverage site coverage, including around the diesel generator room in accessible areas of the basement level. SV1 was placed within vicinity of the potential former dry cleaner on the southern side and SV3 was placed in the vicinity of the former dry cleaner prior to construction of the current building.

The general sampling methods are described in the field work methodology in Appendix D.

All samples were analysed for the CoPC in the CSM.

8.4 Groundwater sampling and analysis rationale

In order to assess the current groundwater contamination status at the site and evaluate whether historical, current and off-site land uses have impacted on groundwater, opportunistic sampling from two geotechnical groundwater monitoring wells (MW1 and MW2) was undertaken:

- BH101 / MW01 was positioned in the north of the site, to target the former off-site dry cleaners located at 100 Miller Street (west of site) and 87 Miller Street (North-west of site). The well was 15 m in depth with a screen between 9-15 m; and

- BH102 / MW02 was positioned adjacent to the diesel tank to target the potential source of contamination from the oil tank. The well was 5 m in depth with a screen between 2-5 m. It is noted that MW02 did not have sufficient groundwater for sampling at the time of the investigation.

The general sampling methods are described in the field work methodology in Appendix D.

All samples were analysed for the CoPC in the CSM.

9. Site assessment criteria

The site assessment criteria (SAC) applied in the current investigation are informed by the CSM (Section 7) 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 following considerations were made when applying the current investigation levels:

- The development comprises commercial (retail) and tertiary education;
- Fully and permanent paved surface; and
- High rise structure.

It is considered that the exposure pathways and sensitive receptors under the proposed commercial (retail) / tertiary education use are most consistent with the generic assumptions for commercial use. As such, the investigation and screening levels applied in the current investigation comprise levels adopted for commercial and industrial use. The derivation of the SAC is in Appendix E, and the adopted SAC are listed on the summary analytical results tables in Appendix F.

10. Results

10.1 Field work results

10.1.1 Borehole logs

The borehole logs for this assessment are provided in Appendix F. The following general subsurface profile was recorded on the logs:

Concrete:	In all test locations to depths of between 0.20 m and 0.25 m below ground level (bgl).
Bituminous membrane layer:	In all test locations to depths of between 0.25 m and 0.27 m bgl.
Concrete:	In all test locations to depths of between 0.30 m and 0.35 m below ground level (bgl).

Fill / Gravel:	Coarse grey gravel in all test locations to depths of 0.39 m to 0.5 m bgl. Hand augered borehole locations HA01, HA02, HA04, HA05, HA06, HA07, HA08 and HA09 were terminated in this horizon upon refusal on inferred sandstone.
Fil / Sand:	Generally comprising pale brown sand with gravel test locations BH101, BH102, HA03 and HA10 to depths of between 0.35 m and 0.68 m bgl.
Sandstone:	Sandstone in BH101 and BH102 from 0.80 m and 0.54 m bgl to borehole termination at 22.55 m and 8.00 m bgl respectively.

No visual or olfactory evidence (e.g. staining, odours, free phase product) was observed during the investigations to suggest the presence of contamination within the soils or groundwater at the site.

The PID screening recorded values of less than 1 ppm suggesting the absence, or very low concentrations, of VOC in the samples tested.

No free groundwater was observed during drilling of boreholes, noting boreholes were backfilled at completion of sampling precluding long term observations, with the exception of the wells as discussed below.

10.1.2 Groundwater records

Groundwater levels were gauged on 24 September 2024 using an electronic oil / water interface meter prior to developing the wells and again on 30 September 2024 prior to sampling. The measured water levels prior to sampling are shown in Table 5. Groundwater levels are affected by climatic conditions and soil permeability and will therefore vary with time.

Table 5: Summary of groundwater level measurements on 30 September 2024

Well ID	Location of monitoring well	Floor level of well	Relative Level (m)	Screening intervals (bgl)	SWL (bgl)
MW01 / BH101	up-gradient	Car park level	58.4 AHD	9-15 m	11.73 m
MW02 / BH102	down-gradient	Basement level	54.0 AHD	3-5 m	4.22 m

Notes:

AHD – Australian Height Datum

SWL – standing water level

bgl – below ground level

The stabilised groundwater field parameters recorded prior to sampling are shown on the groundwater field sheets provided in Appendix G and summarised below.

Physical parameters were measured whilst sampling (where possible) and are summarised in Table 6.

Table 6: Summary of field parameters (groundwater and surface water)

Well / Sample ID	Temp. (°C)	DO (ppm)	TDS (ppm)	EC (µS/cm)	pH	Redox (mV)
MW01 / BH101	19.7	0.91	324.66	463.8	5.92	191.5
MW02 / BH102	Insufficient groundwater in well to obtain parameters					

No light non-aqueous phase liquid (LNAPL) was observed whilst sampling.

10.1.3 Soil vapour records

Soil vapour sampling locations are shown on Drawing D.002, Appendix A. Soil vapour field sheets are provided in Appendix G.

Field measurements were recorded from each soil vapour pins prior to sampling and no issues of concern were recorded during the sampling.

Field measurements that were recorded are summarised as below:

- Oxygen was recorded at 20.9% v/v at all pin locations;
- Carbon dioxide was recorded at 0% v/v at all locations;
- Carbon monoxide was recorded at 0 ppm at all locations;
- Hydrogen sulfide was recorded between 0 and 0.6 ppm; and
- PID readings were recorded between 0 ppm and 5 ppm.

10.2 Laboratory analytical results

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

- Table F1: Summary of results of soil analysis;
- Table F2: Summary of results of waste classification assessment;
- Table F3: Summary of results of soil vapour analysis; and
- Table F4: Summary of results of water analysis.

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

10.3 Data quality assurance and quality control

The data quality assurance and quality control (QA / QC) results are provided in Appendix H. Based on the results of the field QA and field and laboratory QC, and evaluation against the data quality indicators (DQI), it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

11. Discussion

11.1 Soils

The analytical results for all contaminants tested in all samples were below the SAC. However, there were detections of heavy metals in all test locations, and detections of PAH and TRH in the following samples:

- HA01 / 0.35-0.45 m: Total PAH at 0.52 mg/kg, TRH F2 at 98 mg/kg, TRH F3 at 1300 mg/kg and TRH F4 at 580 mg/kg;
- HA08 / 0.4-0.45 m: TRH F2 at 68 mg/kg, TRH F3 at 830 mg/kg and TRH F4 at 370 mg/kg;
- HA09 / 0.3-0.35 m: TRH F3 at 680 mg/kg and TRH F4 at 270 mg/kg;
- HA09 / 0.35-0.4 m: Benzo(a)pyrene (BaP) at 0.2 mg/kg and total PAH at 2.6 mg/kg;
- HA10 / 0.25-0.4 m: TRH F3 at 240 mg/kg and TRH F4 at 150 mg/kg; and
- BH102 / 0.45-0.5 m: BaP at 0.06 mg/kg, total PAH at 0.2 mg/kg, TRH F3 at 250 mg/kg and TRH F4 at 160 mg/kg.

To assist in assessing the possible source of TRH contamination, chromatograms of analysed samples from test locations HA01, HA08, HA09 and HA10 were requested from the laboratory. Review of the chromatograms (attached in Appendix I) with reference to the laboratory's hydrocarbon library and comment from the laboratory indicated the TRH could be asphalt. It is noted that this is potentially consistent with the bituminous membrane recorded in the concrete slab profile being a potential source of the TRH.

It is also noted that all these detections were above the laboratory practical quantitation limit (PQL), but below the adopted SAC.

11.2 Preliminary *in-situ* waste classification assessment

The following Table 18 presents the results of the six-step procedure outlined in NSW EPA (2014) for determining the type of waste and the waste classification. This process applies to the fill (including surface soils) at the site, which do not meet the definition of virgin excavated natural material (VENM).

Table 7: Six-step classification procedure

Step	Comments	Rationale
1. Is the waste special waste?	No	No asbestos-containing materials (ACM), clinical or related waste, or waste tyres were observed in the test locations. Asbestos was not detected by the analytical laboratory.
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). The natural soil, if classified as VENM, is pre-classified as general solid waste (non-putrescible).
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 F2 (attached).
6. Is the waste putrescible or non-putrescible?	Non-putrescible	The fill does not contain materials considered to be putrescible ^a .

Note: a 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 the attached Table F2, all contaminant concentrations for the analysed fill samples were below the contaminant thresholds (CTIs) for general soil waste, with the exception of nickel in samples HA04 / 0.35-0.4 m at a concentration of 43 mg/kg, HA06 / 0.35-0.4 m at a concentration of 52 mg/kg and BH102 / 0.24-0.4 m at 44 mg/kg exceeding the CTI criteria of 40 mg/kg.

TCLP tests were conducted for the analytes exceeding the CTI thresholds. The total and TCLP concentrations for nickel were below the specific contamination concentration (SCC1) and TCLP1 thresholds for general solid waste respectively.

Therefore, the fill within the site is preliminary classified as general solid waste (non-putrescible). It is noted that further *in-situ* or *ex-situ* investigations including visual and analytical processes are required to confirm the preliminary waste classification of surplus soils, prior to off-site disposal.

11.3 Soil vapour

The analytical results indicated that concentrations of the primary target CoPC volatile chlorinated hydrocarbons (VCH) in sub-slab vapour were below the NEPC (2013) Tier 1 interim HIL for TCE, PCE and cis-1,2-DCE for the proposed land use.

11.4 Groundwater

Groundwater sampling was only conducted from one groundwater well (MW01 / BH101). All results were below the SAC for TRH, BTEX, PAH, OCP, OPP, PCB and VOC. The results exceeded the SAC for the following contaminants:

- Copper in samples MW01 at 44 µg/L and BD1 (replicate of MW01) at 47 µg/L;
- Nickel in samples MW01 at 24 µg/L and BD1 at 29 µg/L; and
- Zinc in MW01 at 62 µg/L and BD1 at 69 µg/L.

Based on our experience in the area, the concentrations of metals in groundwater are considered likely to be attributed to the background concentrations that would be reflective of regional conditions.

There were also some detections of TRH (F1 and F2) and VOC (bromodichloromethane, dibromochloromethane and chloroform, which are all classified as trihalomethanes) above the laboratory detection limit but below the adopted SAC. Trihalomethanes can occur from water chlorination and may be indicative of the groundwater in the area of the well (or in the well) being impacted by leakage from the potable water supply. Chloroform also has a range of industrial uses and can be used in dry cleaning.

The recorded TRH was in the light to medium fraction (F1 and F2) rather than the medium to heavy fraction (F2 to F4) recorded in soil, which is indicative of an alternative source. The recorded TRH could consist of the detected VOC or be indicative of contamination from a different potential source, such as the former on- and off-site sources such as the motor garages or dry cleaners.

Further investigation is required to assess the significance of the recorded TRH and VOC.

12. Revised conceptual site model

The data collected for this DSI has generally confirmed that certain potential contaminant sources outlined in the CSM outlined in Section 7 pose a potentially complete pathway to the identified receptor(s) whilst others do not. No other sources of contamination have been identified as a result of the testing results. This is summarised in Table 8.

Table 8: Updated summary of potentially complete exposure pathways (proposed land use)

Source and CoPC	Exposure pathway	Receptor	Risk management action
S1: Fill	HP1: Ingestion and dermal contact HP2: Inhalation of dust and / or vapours	HR1: Current users [commercial] HR2: Construction and Maintenance workers HR3: End users [commercial (retail) / tertiary education]	No contamination has been identified above the SAC and / or expected background levels. However, some contaminants potentially associated with the former uses were identified, albeit below the SAC. It is recommended that risk is managed through further targeted assessment, removal of the oil / diesel tanks and associated infrastructure, and implementation of an unexpected finds protocol (UFP) during future ground works.
S2: Historic and current site on uses (former on-site dry cleaners, existing above ground diesel / oil tanks and storage of solvents:	HP2: Inhalation of dust and / or vapours EPI: Leaching of contaminants and vertical migration into groundwater	HR1: Current users [commercial] HR2: Construction and Maintenance workers HR3: End users [commercial (retail) / tertiary education] ER1: Groundwater	

13. Conclusions and recommendations

The proposed redevelopment at the site includes the adaptive repurposing of the existing building and extension of the Denison Street wing. The proposed development comprises refurbishment and extension of the proposed building for commercial (retail) and tertiary educational use.

The investigation comprised an intrusive soil, soil vapour and groundwater investigation to assess the potential for contamination at the site. The concentration of contaminants in all analysed soil and soil vapour were within the adopted SAC. Low levels of TRH were recorded in a number of samples. The fill within the site is preliminarily classified as general solid waste - non putrescible.

The concentration of contaminants in the groundwater sample were below the SAC with the exception of copper, and nickel and zinc, which were assessed to be within expected background levels. There were also some detections of TRH (F1 and F2) and VOC in groundwater.

It is noted that the minimum sampling density requirements of NSW EPA (2022) were not met at the time of this investigation due to access constraints. Given the high-risk sources identified in the site history and detections of low levels of contaminants potentially associated with these sources further assessment is considered to be required to assess the significance of these detections and confirm the site suitability for the proposed redevelopment, or otherwise to identify actions required to render the site suitable.

The following additional works are recommended:

Additional groundwater monitoring to assess groundwater conditions on site:

- Additional soil vapour investigation to further assess potential impacts, including from the above ground diesel tanks, diesel generator room and boiler room;
- Decommissioning of the above ground oil / diesel tanks and associated infrastructure (including pipework) if the tanks are not to be used in the future. It is anticipated that this would be conducted as part of the redevelopment;
- Development and implementation of an unexpected finds protocol (UFP) for all groundworks. The UFP should set out how any indicators of potential contamination will be assessed and managed; and
- Confirmation of the preliminary waste classification reported herein by a suitably qualified environmental consultant prior to off-site disposal of any excess soil / rock.

14. 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. (2019). *Preliminary Contamination Investigation, Proposed 'Campus 105' Development, 105 Miller Street, North Sydney*.

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.

15. Limitations

Douglas Partners Pty Ltd (Douglas) has prepared this report (or services) for this project at 105-153 Miller Street, North Sydney NSW in line with Douglas' proposal dated 4 June 2024 and acceptance received from Callan Salter of Investa. The work was carried out under Douglas' Engagement Terms. This report is provided for the exclusive use of Investa 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.

The assessment of atypical safety hazards arising from this advice is restricted to the environmental components set out in this report and based on known project conditions and stated design advice and assumptions. While some recommendations for safe controls may be provided, detailed 'safety in design' assessment is outside the current scope of this report and requires additional project data and assessment.

Asbestos has not been detected by observation or by laboratory analysis, either on the surface of the site, or in fill materials at the test locations sampled and analysed.

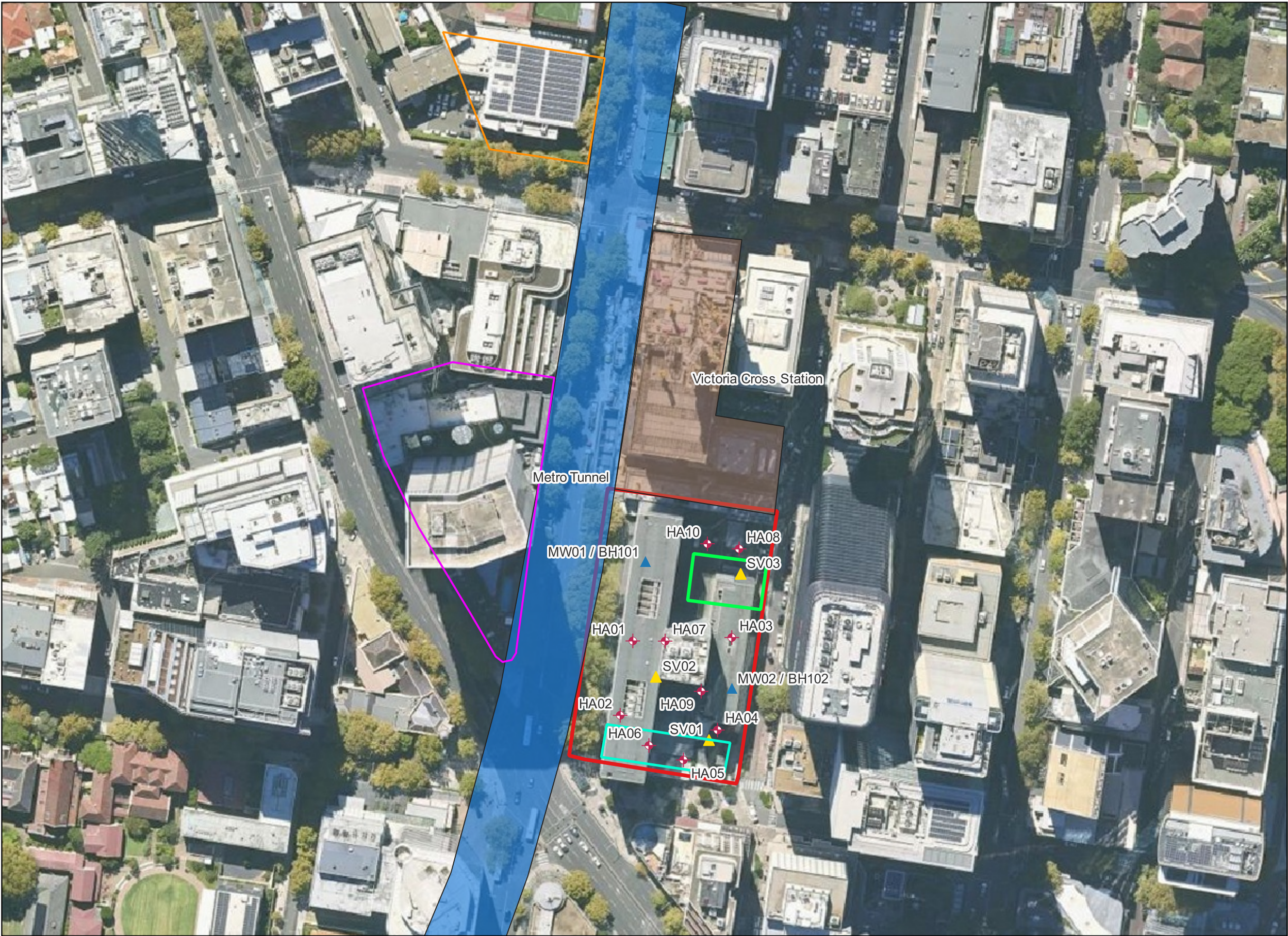
Although the sampling plan adopted for this investigation is considered appropriate to achieve the stated project objectives, there are necessarily parts of the site that have not been sampled and analysed. This is either due to undetected variations in ground conditions or to budget constraints (as discussed above). It is therefore considered possible that HBM, including asbestos, may be present in unobserved or untested parts of the site, between and beyond sampling locations, and hence no warranty can be given that asbestos is not present.

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.

Appendix A

Drawings



SITE LOCATION

LEGEND

Potential contaminant sources

- Potential off-site source (Former dry-cleaners, former diesel engine distributor and former chemical manufacturer)
- Potential off-site source (Former dry cleaners, former plastic manufacturer)
- Former on-site dry cleaner
- Potential location of former on-site dry cleaner

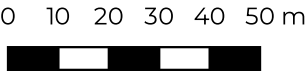
Sample points

- Hand auger location
- Groundwater well location
- Soil vapour pin location

Features

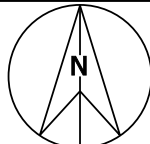
- Metro Tunnel
- Victoria Cross Station
- Site Boundary

NOTE:
1. Drawing projection in GDA2020 / MGA zone 56, adapted from aerial imagery from "MetroMap"
2. All locations and features and approximate only

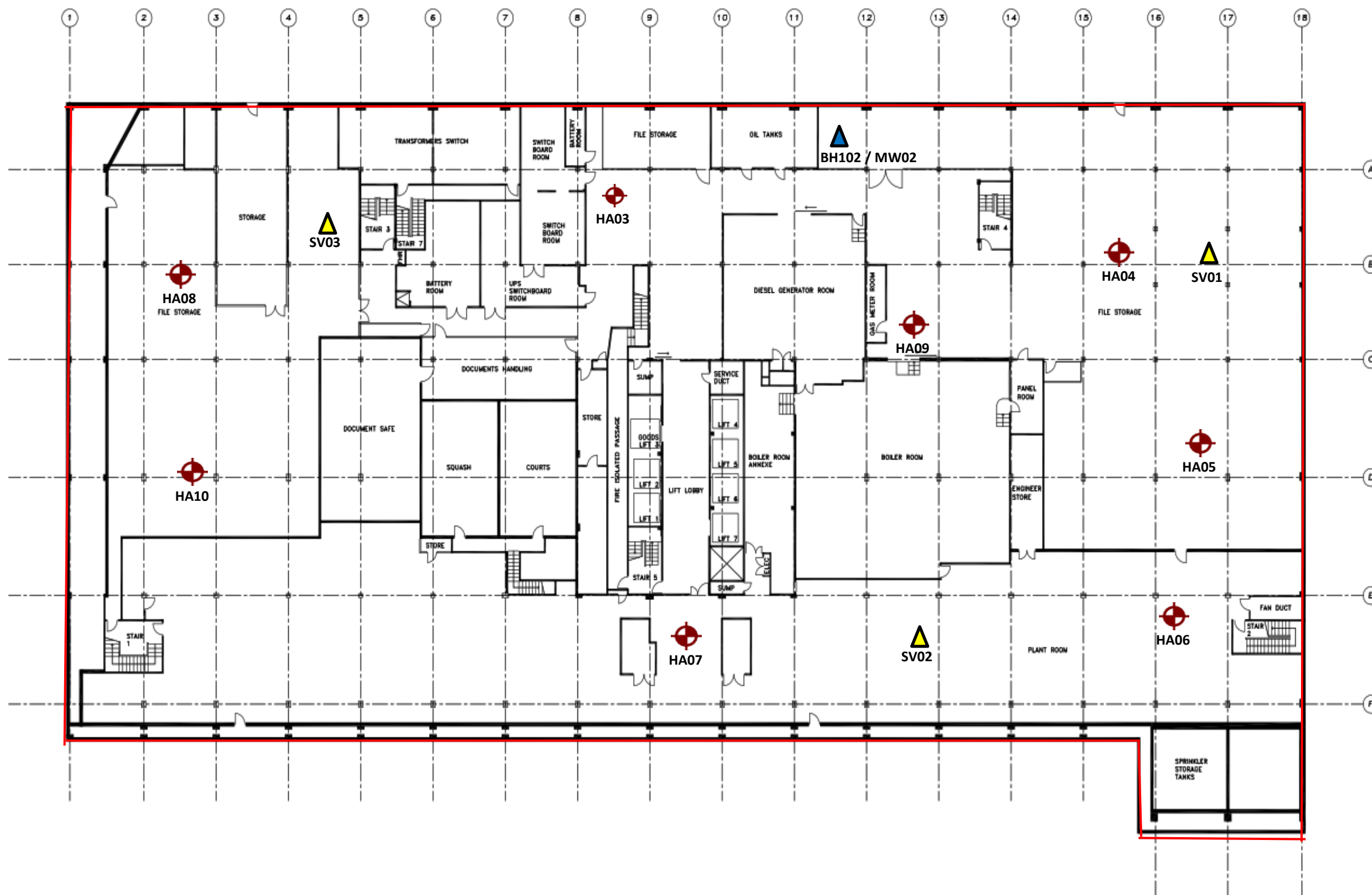


CLIENT: Investa Commercial Developments
OFFICE: Sydney
SCALE: 1:1500 @A3
DRAWN BY: HT
DATE: 22.October.2024

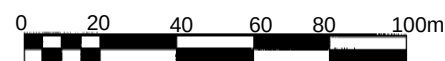
TITLE: **Site locations, boundaries and potential sources of contamination**
Proposed Redevelopment
105 Miller Street, North Sydney, NSW



PROJECT: 86964.04
DRAWING No: 1
REVISION: 0



- LEGEND**
- Site Boundary
 - Borehole Location
 - Soil Vapour Well Location
 - Groundwater Well Location



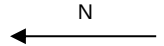
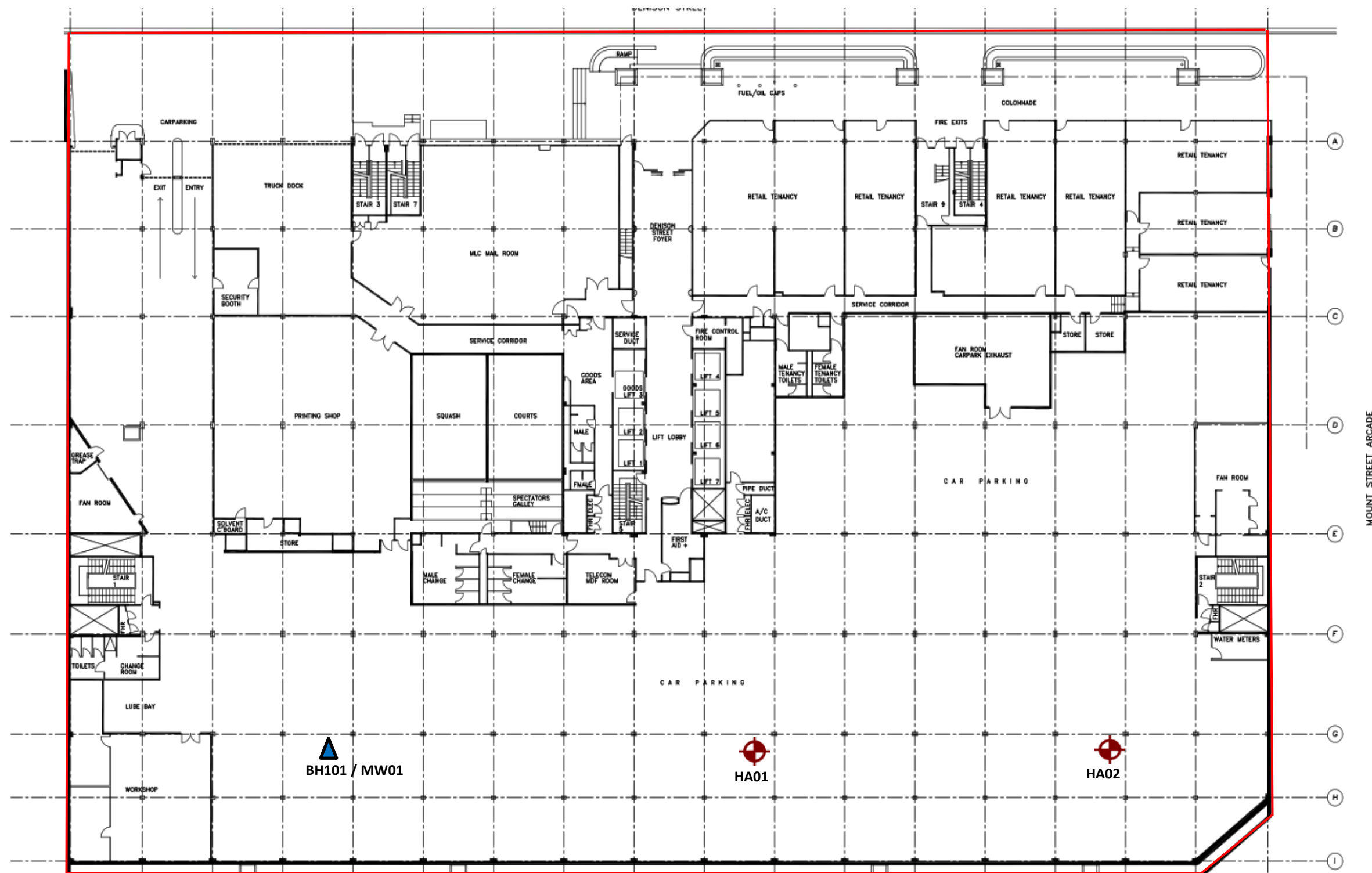
Notes: Test locations are approximate only. Basemap extracted from client supplied site plans.



CLIENT:	Investa Commercial Developments Pty Ltd
OFFICE:	SYD
SCALE:	as shown
DRAWN BY:	IR
DATE:	20 Sep 2024

TITLE: **Test Location Plan (Basement Level)**
Proposed Redvelopment
105 Miller Street, North Sydney, NSW

PROJECT No:	86964.04
DRAWING No:	D.002
REVISION:	0



MOUNT STREET ARCADE

LEGEND

- Site Boundary
- ⊕ Borehole Location
- ▲ Groundwater Well Location



Notes: Test locations are approximate only. Basemap extracted from client supplied site plans.



CLIENT: Investa Commercial Developments Pty Ltd	
OFFICE: SYD	DRAWN BY: IR
SCALE: as shown	DATE: 20 Sep 2024

TITLE: **Test Location Plan (Lower Ground Level)**
Proposed Redevelopment
105 Miller Street, North Sydney, NSW

PROJECT No:	86964.04
DRAWING No:	D.003
REVISION:	0

Appendix B

About This Report

Introduction

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

DP's 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

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

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, DP 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, DP 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, DP will be pleased to assist with investigations or advice to resolve the matter.

continued next page

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, DP 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. DP 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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Appendix C

Data Quality Objectives

1. Data quality objectives

The DSI 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 investigation is to assess the contamination status of the site with respect to the proposed land use. The report is being undertaken as the site is to be redeveloped. A preliminary conceptual site model (CSM) has been prepared (Section 7) for the proposed development. The project team consisted 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 history has identified possible contaminating previous uses which are identified in the CSM (Section 7). The CSM identifies the associated contaminants of potential concern (CoPC) and the likely impacted media. The site assessment criteria (SAC) for each of the CoPC are detailed in Appendix E. The decision is to establish whether or not the results fall below the SAC. On this basis, an assessment of the site's suitability from a contamination perspective will be derived and a decision made on whether (or not) further assessment and / or remediation will be required.
3: Identify the information inputs	Inputs will be the analytical results for the CoPC (identified in the CSM, Section 7) from NATA accredited laboratories and methods, where possible. The SAC for each of the CoPC are detailed in Appendix E. A photoionisation detector (PID) was used on-site to screen soils for VOC. PID readings 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 extent of contamination impact as determined from the site history assessment and site observations. The assessment is limited to the timeframe over which the field works were undertaken. Constraints to the assessment are identified and discussed in the conclusions of the report, Section 13.
5: Develop the analytical approach (or decision rule)	The decision rule is to compare all analytical results with the SAC (Appendix E, based on NEPC (2013)). Where guideline values are absent, other sources of guideline values accepted by NEPC (2013) shall be adopted where possible. Where a sample result exceeds the adopted criterion, a further site-specific assessment will be made as to the risk posed by the presence of that contaminant(s). Quality control results are to be assessed according to their relative percent difference (RPD) values. For field duplicates, triplicates and laboratory results, RPD

Step	Summary
	values should generally be below 30%; for field blanks and rinsates, results should be at or less than the limits of reporting (NEPC, 2013). The field and laboratory quality assurance assessment is included in Appendix H.
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 as such, 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 is assumed that the baseline condition is true.
7: Optimise the design for obtaining data	As the purpose of the investigation is to assess the contamination status of the site, the sampling program is reliant on professional judgement to identify and sample the potentially affected areas. Further details regarding the proposed sampling plan are presented in Section 8.

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 D

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); and
- ASTM *Standard Practice for Active Soil Gas Sampling in the Vadose Zone for Vapour Intrusion Evaluations* (ASTM D7663-12, 2018).

2. Soil sampling

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

- Collect soil samples directly from hand auger;
- Transfer samples in laboratory-prepared glass jars with Teflon lined lids by hand, 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, where possible;
- 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.

2.1 Field testing

Field testing is carried out in accordance with Douglas' standard operating procedures. The general sampling and sample management procedures comprise:

PID field test

- Calibrate the PID with isobutylene gas at 100 ppm and with fresh air prior to commencement of each successive day's field work;
- Allow the headspace in the PID zip-lock bag samples to equilibrate; and
- Screen using the PID.

3. Soil vapour sampling

3.1 Vapour well installation

- Drill a 38 mm pilot hole into the pavement to a depth of approximately 50 mm using a rotary hammer drill and masonry bit;
- Drill a second hole with a diameter of 16 mm to fully penetrate the pavement (approximately 150 mm);
- Insert a pre-fabricated stainless-steel vapour pin with a silicon sleeve (with an outer diameter approximately 20 mm) into the drilled hole and then drive into the pavement using a hammer. The silicon sleeve holds the pin in place. No glues, cements or other binding products are applied to the installation;
- Place a plastic cap on the inlet to the pin and screw a stainless-steel cap into place; and
- Allow the pins to sit for approximately 60 minutes to equilibrate to ambient conditions before purging.

3.2 Soil vapour sampling

The soil vapour sampling is carried out in accordance with Douglas' standard operating procedures based on ASTM (2018) and current industry practice. The general sampling and sample management procedures comprise:

- Connect sample tubing directly to the vapour pin outlet following removal of the stainless-steel cap and plastic cap;
- Collect the primary soil vapour sample to a Summa canister and the backup sample on carbon tubes. Attach Summa canisters directly to the sample point via disposable tubing. Collect the back-up sample using an air sampling pump, with the flow rate monitored using a rotameter and vacuum gauge;
- Perform shut in tests (minimum 30 seconds) following assembly of the sampling apparatus comprising:
 - o Summa canister: Assemble the sample apparatus to the extent practical (i.e. connecting the Summa canister to the regulator), then open the canister valve to apply the vacuum (of between -29 mm Hg to -30 mm Hg) to the sampling train, while the regulator is still capped;
 - o Carbon back-up tube: Assemble the sample train (fittings to attach to vapour well, carbon tube, vacuum gauge, rotameter and pump plus the associated tubing connecting the sample train) then clamp the sampling tube between the vapour port and carbon tube, activate the pump until a vacuum of 15 in Hg is achieved and then the sampling train is clamped at the pump;
- Purge the soil vapour well prior to sampling by removing one volume of air / vapour from the well (~500 ml);
- Introduce liquid isopropyl alcohol (IPA) into the sampling shroud to act as a tracer gas for leaks in the soil vapour well and / or the sampling train. All samples are analysed for IPA as part of the TO15 analysis;
- Take PID readings from the soil vapour well prior to and following application of the IPA tracer gas. Take a PID reading inside the shroud to provide a field indication of potential leaks;

- Measure general gas parameters from the soil vapour well, including methane, oxygen and carbon dioxide, on-site using a calibrated landfill gas analyser;
- Collect primary samples directly from the soil vapour port into 1 L Summa canisters with a flow regulator set by the analytical laboratory (approximately 100 ml/min). The regulators are supplied by the analytical laboratory and are decontaminated by the laboratory prior to shipment;
- Collect an intra-laboratory QC duplicate soil vapour sample;
- Collect back-up samples directly onto carbon tubes using an SKC constant flow air-sampling pump, low flow adapter and rotameter to confirm the flow rate;
- Collect a shroud sample on a carbon tube to conduct analysis for IPA and determine the concentration of the tracer compound in the shroud;
- Collect the VOC sample from the sample point directly into the sorbent tube / canister so as not to pass through the pump, rotameter or tubing which has the potential to contaminate the samples (rotameter not required for canisters); and
- Label the sample canisters and tubes and record on chain of custody documentation. Complete field sampling sheets and transport samples to the laboratory in an appropriate sealed container.

4. Groundwater sampling

4.1 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 sand filter pack to approximately 0.5 m above the screened interval. Each well is completed with a hydrated bentonite plug of at least 0.5 m thick and then bentonite to the surface, finished with a steel gatic cover on the surface.

4.2 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 five well volumes, or until dry.

4.3 Groundwater sampling

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 1 m below the top of the water column (provided the depth of the pump is within the screened section) or to 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;
- Following stabilisation of the field parameters, collect samples in laboratory-prepared bottles minimising headspace within the sample bottle and cap immediately;
- 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.

5. References

ASTM D7663-12. (2018). *Standard Practice for Active Soil Gas Sampling in the Vadose Zone for Vapour Intrusion Evaluations*. 2018 e1 (editorial change to 2012 revision): American Society for Testing and Materials.

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

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); and
- 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 proposed redevelopment comprises a mixed-use land use, comprising tertiary educational and commercial (retail) facilities. The scope of this report is limited to the tertiary education use. It is considered that the exposure pathways and sensitive receptors under the proposed commercial (retail) and tertiary education use are most consistent with the generic assumptions for commercial use. As such, the commercial / industrial land use criteria (HIL-D) has been adopted.

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

- Land use: mixed-use development commercial (retail) / tertiary education;
 - Corresponding to land use category 'D', commercial / industrial such as shops, offices, factories and industrial sites; and
- Soil type: sand.

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-D
Metals	
Arsenic	3000
Cadmium	900
Chromium (VI)	3600
Copper	240 000
Lead	1500
Mercury (inorganic)	730
Nickel	6000
Zinc	400 000
PAH	
B(a)P TEQ	40
Total PAH	4000
Phenols	
Phenol	240 000
OCP	
DDT+DDE+DDD	3600
Aldrin and dieldrin	45
Chlordane	530
Endosulfan	2000
Endrin	100
Heptachlor	50
HCB	80
Methoxychlor	2500
OPP	
Chlorpyrifos	2000
PCB	
PCB	7

Table 2: Health screening levels (mg/kg)

Contaminant	HSL-D
SAND	0 m to <1 m
Benzene	3

Contaminant	HSL-D
Toluene	NL
Ethylbenzene	NL
Xylenes	230
Naphthalene	NL
TRH F1	260
TRH F2	NL

Notes: TRH F1 is TRH C₆-C₁₀ minus BTEX

TRH F2 is TRH >C₁₀-C₁₆ 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 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'.

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-D
Benzene	430
Toluene	99 000
Ethylbenzene	27 000
Xylenes	81 000
Naphthalene	11 000
TRH F1	26 000
TRH F2	20 000
TRH F3	27 000
TRH F4	38 000

Notes: TRH F1 is TRH C₆-C₁₀ minus BTEX

TRH F2 is TRH >C₁₀-C₁₆ minus naphthalene

2.2 Asbestos in soil

The HSL for asbestos in soil are based on likely exposure levels for different scenarios published in NEPC (2013) for the following forms of asbestos:

- Bonded asbestos containing material (ACM); and
- Fibrous asbestos and asbestos fines (FA and AF).

The HSL are in Table 4.

Table 4: Health screening levels for asbestos

Form of asbestos	HSL-D
ACM	0.05%
FA and AF	0.001%
FA and AF and ACM	No visible asbestos for surface soil *

Notes: Surface soils defined as top 10 cm.

* Based on site observations at the sampling points and the analytical results of surface samples.

2.3 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 5.

Table 5: Management limits (mg/kg)

Contaminant	Soil type	ML-D
TRH F1	Fine	800
TRH F2	Fine	1000
TRH F3	Fine	5000
TRH F4	Fine	10 000

Notes: TRH F1 is TRH C₆-C₁₀ including BTEX

TRH F2 is TRH >C₁₀-C₁₆ including naphthalene

3. Soil Vapour

3.1 Interim soil vapour health investigation levels

Soil vapour interim HIL for specific chlorinated VOC were published by NEPC (2013) to assess the vapour intrusion exposure pathway.

The interim HIL for chlorinated VOC methodology employs a simple though conservative approach using an attenuation factor that relates the concentration of a volatile contaminant in indoor air to the concentration in soil gas immediately below a building foundation slab.

The interim health investigation levels (IHIL) derived from NEPC (2013) are in Table 6.

Table 6: Soil vapour interim health investigation levels, chlorinated hydrocarbons (µg/m³)

Chemical	IHL-D
TCE	80
1,1,1-TCA	230 000
PCE	8000
cis-DCE	300
VC	100

Notes: TCE trichloroethene
 1,1,1-TCA 1,1,1-trichloroethane
 PCE tetrachloroethene
 cis-DCE cis-1,2-dichloroethene
 VC chloromethane / vinyl chloride

3.2 Health screening levels

Soil vapour HSL for petroleum hydrocarbons were published by NEPC (2013) to assess the vapour intrusion exposure pathway.

The HSL derived from NEPC (2013) are in Table 7.

Table 7: Soil vapour health screening levels for vapour intrusion (µg/m³)

Contaminant	HSL-D
SAND	0-1 m
Benzene	4000
Toluene	4 800 000
Ethylbenzene	1 300 000
Xylene Total	840 000
Naphthalene	3000
TRH F1	680 000
TRH F2	500 000

Notes: TRH F1 is TRH C₆-C₁₀ minus BTEX
 TRH F2 is TRH >C₁₀-C₁₆ minus naphthalene

The maximum possible soil vapour concentrations have been calculated based on vapour pressures of the pure chemicals. Where soil vapour HSL exceed these values, a soil-specific 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. Groundwater

4.1 Introduction

The groundwater investigation levels (GIL) used for interpretation of the groundwater data (as a Tier 1 assessment) have been selected based on the potential risks posed from contamination sourced from the site to receptors at or down-gradient of the site, as identified by the conceptual site model (CSM). The receptors, exposure points and pathways are summarised in Table 8.

Table 8: Summary of potential receptors and potential risks

Receptor	Location	Exposure point	Exposure pathway
Surface water aquatic ecosystem	Down-gradient from site.	Receiving surface water body at the groundwater discharge point. (Parramatta River)	Exposure to contaminants.
Occupants of buildings	On site and down-gradient from site.	Enclosed buildings (existing)	Inhalation of VOC (including TRH and BTEX) overlying VOC impacted groundwater via the vapour intrusion pathway.

The rationale for the selection of GIL is in Table 9.

Table 9: Groundwater investigation level rationale

Receptor / beneficial use	GIL	Source	Comments / rationale
Aquatic ecosystem	DGV	ANZG (2018)	Marine water 99% LOP for bioaccumulative contaminants 95% LOP for non-bioaccumulative contaminants
Building occupants (vapour intrusion)	HSL	NEPC (2013)	8m +

Notes: DGV default guideline value
 % LOP percentage level of protection of species
 HSL health screening level
 GV guideline value

4.2 Groundwater investigation levels for aquatic ecosystems

The DGV for the protection of aquatic ecosystems derived from ANZG (2018) are in Table 10.

Table 10: Groundwater investigation levels for protection of aquatic ecosystems (µg/L)

Contaminant	Marine DGV 95% LOP	Notes
Metals / metalloids		
Arsenic	24 / 13	Levels provided for As III / As IV respectively as adopted from freshwater criteria in absence of marine criteria. Unknown reliability.
Cadmium	0.7	99% LOP adopted as recommended due to potential for bioaccumulation. Very high reliability.
Chromium (VI)	4.4	Chromium VI levels adopted as initial screen for total chromium. Very high reliability.
Copper	1.3	Very high reliability.
Lead	4.4	Low reliability.
Mercury (inorganic)	0.1	99% LOP adopted as recommended due to potential for bioaccumulation. Very high reliability.
Nickel	7	99% LOP adopted as recommended to protect key species from chronic toxicity. Very high reliability.
Zinc	8	Very high reliability.
BTEX		
Benzene	500	99% LOP adopted as recommended to protect key species from chronic toxicity. Moderate reliability.
Ethylbenzene	80	Unknown reliability.
o-xylene	350	Adopted from freshwater criteria for in absence of marine criteria. Unknown 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	50	99% LOP adopted as recommended to protect key species from chronic toxicity. Moderate reliability.
Phenanthrene	0.6	99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
OCP		
Aldrin	0.003	Unknown reliability and LOP.

Contaminant	Marine DGV 95% LOP	Notes
Chlordane	0.001	Unknown reliability and LOP.
DDT	0.0004	Unknown reliability and LOP.
Dieldrin	0.01	Freshwater criteria adopted in absence of marine criteria. Unknown reliability and LOP.
Endosulfan	0.005	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Endrin	0.004	99% LOP adopted as recommended due to potential for bioaccumulation. Moderate reliability.
Heptachlor	0.0004	Unknown reliability and LOP.
Methoxychlor	0.004	Unknown reliability and LOP.
OPP		
Chlorpyrifos	0.009	Low reliability.
Diazinon	0.01	Freshwater criteria adopted in absence of marine criteria. Unknown reliability.
Dimethoate	0.15	Freshwater criteria adopted in absence of marine criteria. Unknown reliability.
Fenitrothion	0.001	Unknown reliability and LOP.
Malathion	0.05	Freshwater criteria adopted in absence of marine criteria. Unknown reliability.
Parathion	0.004	Freshwater criteria adopted in absence of marine criteria. Unknown reliability.
PCB		
Aroclor 1242	0.3	Adopted from freshwater criteria for in absence of marine criteria. 99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
Aroclor 1254	0.01	Adopted from freshwater criteria for in absence of marine criteria. 99% LOP adopted as recommended due to potential for bioaccumulation. Unknown reliability.
VOC		
Tetrachloroethene (PCE)	70	Unknown reliability.
Trichloroethene (TCE)	330	Unknown reliability.
cis-1,2-dichloroethene (DCE)	700	Unknown reliability.
Chloroethene (vinyl chloride / VC)	100	Unknown reliability.

Contaminant	Marine DGV 95% LOP	Notes
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.

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

4.3 Health screening levels for vapour intrusion

The HSL to evaluate potential vapour intrusion risks derived from NEPC (2013) are in Table 11.

Table 11: Groundwater health screening levels for vapour intrusion (µg/L)

Contaminant	HSL-D	HSL-D
SAND	2 m to <4 m	4 m to <8 m
Benzene	5000	5000
Toluene	NL	NL
Ethylbenzene	NL	NL
Xylenes	NL	NL
Naphthalene	NL	NL
TRH F1	6000	6000
TRH F2	NL	NL

Notes: TRH F1 is TRH C₆-C₁₀ minus BTEX
 TRH F2 is TRH >C₁₀-C₁₆ 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'.

5. References

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Appendix F

Summary Results Tables

Table F1: Soil Analysis Summary Results

Table F2: Waste Classification Assessment

Table F3: Groundwater Analysis Summary Results

Table F4: Soil Vapour Analysis Summary Results



Table FI: Summary of Laboratory Results – Soils

			Priority metals								Priority PAH				Priority TRH						BTEX				Priority phenols	Priority OCP										Priority OPP	PCB	Asbestos							
			Total Arsenic	Cadmium	Total Chromium	Copper	Lead	Mercury (inorganic)	Nickel	Zinc	^b Naphthalene	Benzo[a]pyrene (BaP)	Benzo[a]pyrene TEQ (BaP 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	Total Phenolics	^c DDT+DDE+DDD	Aldrin + Dieldrin	Total Chlordane	Total Endosulfan	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Mirex	Chlorpyrifos	Total PCB	FA and AF Estimation	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil <0.1g/kg	Trace Analysis (NEPC)	Total Asbestos#1			
		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	5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.001						0.1	
			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	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	g/kg	
Site Assessment Criteria																																													
HIL D				3000	900	3600	2E+05	1500	730	6000	4E+05			40	4000											45000	600	10	90	400	20	10	15	500	20		340	0.001							
HSL D for vapour intrusion (0 - <1m)											3							45	110			0.5	160	55	40																				
HSL D for direct contact											11000							26000	20000	27000	38000	430	99000	27000	81000																				
Management limits																		800	1000	3500	10 000																								
Sample ID	Depth	Sample Date																																											
HA01	0.35 - 0.4 m	27/08/24	<4	<0.4	6	150	6	<0.1	20	23	<1	<0.05	<0.5	0.52	<25	98	<25	98	1,300	580	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	NAD	-	-	-	-
HA02	0.35 - 0.45 m	27/08/24	<4	<0.4	4	35	4	<0.1	16	18	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HA03	0.3 - 0.4 m	27/08/24	<4	<0.4	5	34	2	<0.1	21	14	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HA03	0.45 - 0.55 m	27/08/24	<4	<0.4	3	7	4	<0.1	5	6	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	NAD	-	-	-	-	
BD1/20240827	0 m	27/08/24	<4	<0.4	4	9	4	<0.1	4	8	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HA04	0.35 - 0.4 m	27/08/24	<4	<0.6	7	35	<2	<0.1	43	18	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	NAD	-	-	-	-
HA05	0.35 - 0.45 m	27/08/24	<4	<0.4	5	43	4	<0.1	23	13	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HA06	0.35 - 0.45 m	27/08/24	<4	<0.4	12	53	4	<0.1	53	17	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HA07	0.45 - 0.5 m	27/08/24	<4	<0.4	7	70	11	<0.1	18	29	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HA08	0.4 - 0.45 m	27/08/24	<4	0.5	10	150	22	<0.1	35	120	<1	<0.05	<0.5	<0.05	<25	68	<25	68	830	370	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	-	NAD	NAD	NAD	<0.1	-	
HA09	0.3 - 0.35 m	27/08/24	<4	<0.4	11	74	12	<0.1	18	28	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	680	270	<0.2	<0.5	<1	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HA09	0.35 - 0.4 m	27/08/24	<4	<0.4	5	28	16	<0.1	9	28	<1	0.2	<0.5	2.6	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.001	-	NAD	NAD	NAD	<0.1	-
HA10	0.3 - 0.35 m	27/08/24	<4	<0.4	<1	41	2	<0.1	3	12	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HA10	0.35 - 0.4 m	27/08/24	<4	<0.4	5	62	20	<0.1	6	17	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	240	150	<0.2	<0.5	<1	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
HA10 - (DUPLICATE)	0.35 - 0.4 m	27/08/24	<4	<0.4	7	120	5	<0.1	18	17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH101	0.39 - 0.43 m	18/09/24	<4	<0.4	3	3	5	<0.1	2	8	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH102	0.35 - 0.4 m	23/09/24	<4	<0.4	9	16	<1	<0.1	44	16	<1	0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH102	0.45 - 0.5 m	23/09/24	<4	<0.4	10	55	7	<0.1	26	26	<1	0.06	<0.5	0.2	<25	<50	<25	<50	250	160	<0.2	<0.5	<1	<1	<5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH102	0.5 - 0.54 m	23/09/24	<4	<0.4	5	33	7	<0.1	12	18	<1	<0.05	<0.5	<0.05	<25	<50	<25	<50	<100	<100	<0.2	<0.5	<1	<1	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	NAD	-	-	-	-	-

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 **Blue** = 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, 2020 (PFAS only))
HSL (vapour intrusion)	HSL-A/B (NEPC, 2013)
DC	Direct contact HSL B Residential (High density) (CRC CARE, 2011)

Table F2: Waste Classification Assessment

			Metals							TRH		BTEx				PAH		Phenols	OCP					OPP	PCB	Asbestos			
			Total Arsenic	Cadmium	Total Chromium	Lead	Mercury (inorganic)	Nickel	Nickel TCLP	TRH C6 - C9	TRH C10-C36	Benzene	Toluene	Ethylbenzene	Total Xylenes	Benzo(a)pyrene (BaP)	Total PAH	Total Phenolics	Scheduled Chemical Waste (standard)	Total Endosulfan	Total Analysed OCP	Mirex	Total Analysed OPP	Total PCB	Asbestos ID in soil >0.1g/kg	Trace Analysis (AS)	Asbestos ID in soil >0.1g/kg	Asbestos ID in soil <0.1g/kg	
		PQL	4	0.4	1	1	0.1	1		25	50	0.2	0.5	1	1	0.05	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1					
Sample ID	Depth	Sample Date	mg/kg	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	mg/kg	mg/kg	-	-	-	-
HA01	0.35 - 0.4 m	27/08/24	<4	<0.4	6	6	<0.1	20	-	<25	1,600	<0.2	<0.5	<1	<1	<0.05	0.52	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	-	-	
HA02	0.35 - 0.45 m	27/08/24	<4	<0.4	4	4	<0.1	16	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-	NAD	NAD	-	-	
HA03	0.3 - 0.4 m	27/08/24	<4	<0.4	5	2	<0.1	21	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-	NAD	NAD	-	-	
BD1/20240827	0.45 - 0.55 m	27/08/24	<4	<0.4	3	4	<0.1	5	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	-	-	
	0 m	27/08/24	<4	<0.4	4	4	<0.1	4	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	
	HA04	0.35 - 0.4 m	27/08/24	<4	<0.6	7	<2	<0.1	43	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	<0.1	NAD	NAD	-	-
	HA05	0.35 - 0.45 m	27/08/24	<4	<0.4	5	4	<0.1	23	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-	NAD	NAD	-	-
	HA06	0.35 - 0.45 m	27/08/24	<4	<0.4	12	4	<0.1	53	<0.02	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-	NAD	NAD	-	-
HA07	0.45 - 0.5 m	27/08/24	<4	<0.4	7	11	<0.1	18	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	-	-	-	-	-	-	-	NAD	NAD	-	-
HA08	0.4 - 0.45 m	27/08/24	<4	0.5	10	22	<0.1	35	-	<25	980	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	NAD	NAD	
HA09	0.3 - 0.35 m	27/08/24	<4	<0.4	11	12	<0.1	18	-	<25	770	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	-	-	-	-	-	-	NAD	NAD	-	-	
HA09	0.35 - 0.4 m	27/08/24	<4	<0.4	5	16	<0.1	9	-	<25	<50	<0.2	<0.5	<1	<1	0.2	2.6	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	NAD	NAD	
HA10	0.3 - 0.35 m	27/08/24	<4	<0.4	<1	2	<0.1	3	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-	NAD	NAD	-	-	
HA10	0.35 - 0.4 m	27/08/24	<4	<0.4	5	20	<0.1	6	-	<25	290	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	-	-	-	-	-	-	NAD	NAD	-	-	
HA01 - [TRIPLICATE]	0.35 - 0.4 m	27/08/24	<4	<0.4	7	5	<0.1	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH101	0.39 - 0.43 m	18/09/24	<4	<0.4	3	5	<0.1	2	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-	NAD	NAD	-	-	
BH102	0.35 - 0.4 m	23/09/24	<4	<0.4	9	<1	<0.1	44	0.02	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	-	-	-	-	-	-	-	NAD	NAD	-	-	
BH102	0.45 - 0.5 m	23/09/24	<4	<0.4	10	7	<0.1	26	-	<25	300	<0.2	<0.5	<1	<1	0.06	0.2	<5	-	-	-	-	-	-	NAD	NAD	-	-	
BH102	0.5 - 0.54 m	23/09/24	<4	<0.4	5	7	<0.1	12	-	<25	<50	<0.2	<0.5	<1	<1	<0.05	<0.05	<5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NAD	NAD	-	-	
Waste Classification Criteria ^f																													
CT1			100	20	100	100	4	40	-	-	10,000	10	288	600	1000	0.8	200	288	<50	60	-	-	4	<50	-	-	-	-	
SCC1			500	100	1,900	1,500	50	1,050	-	-	10,000	18	518	1,080	1,800	10	200	518	<50	108	-	-	7.5	<50	-	-	-	-	
TCLP1			-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CT2			400	80	400	400	16	160	-	-	40,000	40	1,152	2,400	4,000	3.2	800	1,152	<50	240	-	-	16	<50	-	-	-	-	
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	-	-	30	<50	-	-	-	-	
TCLP2			-	-	-	-	-	-	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 F4: Summary of Laboratory Results – Groundwater

Sample ID				HSL for vapour intrusion (4 to <8m)	ANZG (2018) 95% LOP Marine	MW01	BD1
Sample Date		PQL	Units			30/09/24	30/09/24
Metals - Dissolved	Total Arsenic	1	µg/L		24 / 13	<1	<1
	Cadmium	0.1	µg/L		0.7	<0.1	<0.1
	Total Chromium	1	µg/L		4.4	<1	<1
	Copper	1	µg/L		1.3	44	47
	Lead	1	µg/L		4.4	<1	1
	Mercury (inorganic)	0.05	µg/L		0.1	<0.05	<0.05
	Nickel	1	µg/L		7	24	29
	Zinc	1	µg/L		8	62	69
TRH	F1 ((C6-C10)-BTEX)	100	µg/L	6000		47	42
	F2 (>C10-C16 less Naphthalene)	50	µg/L	NL		<50	130
	F3 (>C16-C34)	100	µg/L			<100	<200
	F4 (>C34-C40)	100	µg/L			<100	<200
BTEX	Benzene	1	µg/L	5000	500	<1	<1
	Toluene	1	µg/L	NL	180	<1	<1
	Ethylbenzene	1	µg/L	NL	80	<1	<1
	o-Xylene	1	µg/L		350	<1	<1
	m+p-Xylene	2	µg/L			<2	<2
	Total Xylenes	1	µg/L	NL		<1	<1
PAH	Acenaphthene	0.1	µg/L			<0.1	<0.2
	Acenaphthylene	0.1	µg/L			<0.1	<0.2
	Anthracene	0.1	µg/L		0.01	<0.1	<0.2
	Benzo(a)anthracene	0.1	µg/L			<0.1	<0.2
	Naphthalene	1	µg/L	NL	50	<1	<1
	Benzo(a)pyrene (B(a)P)	0.1	mg/L		0.1	<0.1	<0.2
	Benzo(b,j+k)fluoranthene	0.2	µg/L			<0.2	<0.4
	Benzo(g,h,i)perylene	0.1	µg/L			<0.1	<0.2
	Chrysene	0.1	µg/L			<0.1	<0.2
	Dibenzo(a,h)anthracene	0.1	µg/L			<0.1	<0.2
	Fluoranthene	0.1	µg/L		1	<0.1	<0.2
	Fluorene	0.1	µg/L			<0.1	<0.2
	Indeno(1,2,3-c,d)pyrene	0.1	µg/L			<0.1	<0.2
	Phenanthrene	0.1	µg/L		0.6	<0.1	<0.2
	Pyrene	0.1	µg/L			<0.1	<0.2
	Sum of detected PAH	0.1	µg/L			<0.1	<0.2
	Sum of detected PAH	0.1	µg/L			<0.1	<0.2
OCP	DDE	0.001	µg/L			<0.001	-
	DDT	0.001	µg/L		0.0004	<0.001	-
	DDD	0.001	µg/L			<0.001	-
	Aldrin	0.001	µg/L		0.003	<0.001	-
	Dieldrin	0.001	µg/L		0.01	<0.001	-
	Aldrin + Dieldrin (calculated)	0.001	µg/L			<0.001	-
	alpha-chlordane	0.001	µg/L		0.001	<0.001	-
	gamma-Chlordane	0.001	µg/L			<0.001	-
	Endosulfan I	0.002	µg/L		0.005	<0.002	-
	Endosulfan II	0.002	µg/L			<0.002	-
	Endosulfan Sulphate	0.001	µg/L			<0.001	-
	Endrin	0.001	µg/L		0.004	<0.001	-
	Endrin Aldehyde	0.001	µg/L			<0.001	-
	Heptachlor	0.001	µg/L		0.0004	<0.001	-
	Heptachlor Epoxide	0.001	µg/L			<0.001	-
	Hexachlorobenzene	0.001	µg/L			<0.001	-
	Methoxychlor	0.001	µg/L		0.004	<0.001	-
	alpha-BHC	0.001	µg/L			<0.001	-
	beta-BHC	0.001	µg/L			<0.001	-
	delta-BHC	0.001	µg/L			<0.001	-
	Lindane	0.001	µg/L			<0.001	-
	Sum of detected OCP	0.001	µg/L			<0.001	-
	Sum of detected OCP	0.001	µg/L			<0.001	-
OPP	Azinphos methyl (Guthion)	0.02	µg/L			<0.02	-
	Bromophos-ethyl	0.05	µg/L			<0.05	-
	Chlorpyriphos	0.009	µg/L		0.009	<0.009	-
	Chlorpyriphos-methyl	0.05	µg/L			<0.05	-
	Diazinon	0.01	µg/L		0.01	<0.01	-
	Dichlorvos	0.05	µg/L			<0.05	-
	Dimethoate	0.1	µg/L		0.15	<0.1	-
	Ethion	0.05	µg/L			<0.05	-
	Ronnel (fenchlorphos)	0.05	µg/L			<0.05	-
	Fenitrothion	0.05	µg/L		0.001	<0.05	-
	Fenthion	0.05	µg/L			<0.05	-
	Malathion	0.05	µg/L		0.05	<0.05	-
	Parathion	0.004	µg/L		0.004	<0.004	-
	Parathion-methyl	0.05	µg/L			<0.05	-
	Methidathion	0.05	µg/L			<0.05	-
	Fenamiphos	0.05	µg/L			<0.05	-
	Sum of detected OPP	0.004	µg/L			<0.004	-
	Sum of detected OPP	0.009	µg/L			<0.009	-

Table F4: Summary of Laboratory Results – Groundwater

Sample ID				HSL for vapour intrusion (4 to <8m)	ANZG (2018) 95% LOP Marine	MW01	BD1
Sample Date		PQL	Units			30/09/24	30/09/24
PCB	Arochlor 1016	0.01	µg/L			<0.01	-
	Arochlor 1221	0.01	µg/L			<0.01	-
	Arochlor 1232	0.01	µg/L			<0.01	-
	Arochlor 1242	0.01	µg/L		0.3	<0.01	-
	Arochlor 1248	0.01	µg/L			<0.01	-
	Arochlor 1254	0.01	µg/L		0.01	<0.01	-
	Aroclor 1260	0.01	µg/L			<0.01	-
	Sum of detected PCB	0.01	µg/L			<0.01	-
VOC (excluding BTEX)	1,1,1,2-tetrachloroethane	1	µg/L			<1	<1
	1,1,1-trichloroethane	1	µg/L			<1	<1
	1,1,2,2-tetrachloroethane	1	µg/L			<1	<1
	tetrachloroethene	1	µg/L		70	<1	<1
	1,1,2-trichloroethane	1	µg/L			<1	<1
	1,1,2-trichloroethylene	1	µg/L			<1	<1
	1,1-dichloroethane	1	µg/L			<1	<1
	1,1-Dichloroethene	1	µg/L			<1	<1
	1,1-dichloropropene	1	µg/L			<1	<1
	1,2,3-trichlorobenzene	1	µg/L			<1	<1
	1,2,3-trichloropropane	1	µg/L			<1	<1
	1,2,4-trichlorobenzene	1	µg/L			<1	<1
	1,2,4-trimethyl benzene	1	µg/L			<1	<1
	1,2-dibromo-3-chloropropane	1	µg/L			<1	<1
	1,2-dichlorobenzene	1	µg/L			<1	<1
	1,2-dichloroethane	1	µg/L			<1	<1
	1,2-dichloropropane	1	µg/L			<1	<1
	1,3,5-trimethyl benzene	1	µg/L			<1	<1
	1,3-dichlorobenzene	1	µg/L			<1	<1
	1,3-dichloropropane	1	µg/L			<1	<1
	1,4-dichlorobenzene	1	µg/L			<1	<1
	2,2-dichloropropane	1	µg/L			<1	<1
	2-chlorotoluene	1	µg/L			<1	<1
	4-chlorotoluene	1	µg/L			<1	<1
	4-isopropyl toluene	1	µg/L			<1	<1
	Bromobenzene	1	µg/L			<1	<1
	Bromochloromethane	1	µg/L			<1	<1
	Bromodichloromethane	1	µg/L			6	6
	Bromoform	1	µg/L			<1	<1
	carbon tetrachloride	1	µg/L		240	<1	<1
	Chloroethane	10	µg/L			<10	<10
	Vinyl Chloride	10	µg/L		100	<10	<10
	Chloroform	1	µg/L		370	45	45
	Chloromethane	10	µg/L			<10	<10
	cis-1,2-dichloroethene	1	µg/L		700	<1	<1
	cis-1,3-dichloropropene	1	µg/L			<1	<1
	Isopropylbenzene (cumene)	1	µg/L			<1	<1
	Cyclohexane	1	µg/L			<1	<1
	dibromochloromethane	1	µg/L			<1	1
	Dibromomethane	1	µg/L			<1	<1
	Dichlorodifluoromethane	10	µg/L			<10	<10
	1,2-dibromoethane	1	µg/L			<1	<1
	hexachlorobutadiene	1	µg/L			<1	<1
	Bromomethane	10	µg/L			<10	<10
	Monochlorobenzene	1	µg/L			<1	<1
	n-butyl benzene	1	µg/L			<1	<1
	n-propyl benzene	1	µg/L			<1	<1
	sec-butyl benzene	1	µg/L			<1	<1
	Styrene (vinylbenzene)	1	µg/L			<1	<1
	Tert-butyl benzene	1	µg/L			<1	<1
	trans-1,2-dichloroethene	1	µg/L			<1	<1
	trans-1,3-dichloropropene	1	µg/L			<1	<1
	Trichlorofluoromethane	10	µg/L			<10	<10
	Sum of detected VOC	1	µg/L			51	52

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

ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 95% level of protection of species for marine 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 F3: Summary of Laboratory Results – Soil Vapour

	EQL	VCH							
		trans-1,2-dichloroethene (trans-DCE)	cis-1,2-dichloroethene (cis-DCE)	Trichloroethene (TCE)	Tetrachloroethene (PCE)	Vinyl chloride	1,1-dichloroethene	1,1,1-trichloroethane (1,1,1-TCA)	1,1-dichloroethane
		µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
		2	2	2.7	3.4	1.3	2	2.7	2
Site Assessment Criteria									
IHL D (soil vapour)			300	80	8000	100		230000	
Field ID	Date								
SV1	28/08/24	<2	<2	<1.6	<3.4	<0.8	<2	<2.7	<2
SV2	28/08/24	<2	<2	<1.6	<3.4	<0.8	<2	<2.7	<2
SV3	28/08/24	<2	<2	<1.6	<3.4	<0.8	<2	<2.7	<2
BD1	28/08/24	<2	<2	<1.6	<3.4	<0.8	<2	<2.7	<2

Notes:
Refer to SAC for information on modification of WHO and RSL thresholds

Appendix G

Field Notes and Field Sheets

BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd

PROJECT: Proposed Redevelopment

LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 58.4 AHD

COORDINATE: E:334117.0, N:6254339.4

DATUM/GRID: MGA2020 Zone 56

DIP/AZIMUTH: 90°/---°

LOCATION ID: BH101/MW01

PROJECT No: 86964.03

DATE: 16/09/24

SHEET: 1 of 3

CONDITIONS ENCOUNTERED													SAMPLE			TESTING				
GROUNDWATER	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK						SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
				ORIGIN ^(#)	CONSIS. ^(*) DENSITY ^(*)	MOISTURE	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)								
RL (m)																				
58	0.22	CONCRETE SLAB: 220mm thick, 5mm Ø rebar at 130mm depth; 20mm aggregate, 2mm voids																		
0.30	0.30																			
0.39	0.39																			
0.43	0.43	CONCRETE SLAB: 80 mm thick, 20mm aggregate, 2mm voids																		
0.68	0.68																			
0.80	0.80																			
57	1	FILL / GRAVEL: grey; coarse, sub-angular, igneous; drainage gravel.																		
57	2	FILL / SAND, with gravel: orange-brown; medium; fine, sandstone & ironstone gravel; ripped sandstone.																		
56	3	SANDSTONE: pale grey and orange-brown, medium to coarse grained, indistinctly bedded. Hawkesbury Sandstone																		
55	4	CORE LOSS: 0.12 m																		
55	5	SANDSTONE: pale grey, medium to coarse grained, indistinctly bedded. Hawkesbury Sandstone																		
54	6	3.50m-3.85m: with orange staining																		
54	7	4.50m-7.30m: orange and purple staining																		
53	8																			
52	9																			
51	10																			
50	11																			
49	12																			

PLANT: Hand Tools and Proline

OPERATOR: TightSite (BB)

LOGGED: J.Miller

METHOD: 200mm Ø DT to 0.30m, HA to 0.43m, HQ to 0.68m, NMLC to 25.0m

CASING: HW to 0.6m

REMARKS: No free groundwater observed whilst augering. Concrete and gatic

cover on top of well. Surface level obtained from

AAP Consulting AU2130xxxxxx-001-A-Boreholes.
Refer to explanatory notes for symbol and abbreviation definitions

BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 58.4 AHD
COORDINATE: E:334117.0, N:6254339.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH101/MW01
PROJECT No: 86964.03
DATE: 16/09/24
SHEET: 2 of 3

CONDITIONS ENCOUNTERED										SAMPLE				TESTING						
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK					SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
					ORIGIN(%)	CONSIS.(%)	DENSITY.(%)	MOISTURE	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)								
	48		[CONT] SANDSTONE: pale grey, medium to coarse grained, indistinctly bedded. Hawkesbury Sandstone											SN Fe, RF						
	48	11	10.00m: siltstone laminations											10.35m B, 10°, PR, CT Clay 1mm, RF			PLT	PL(A)=1.4MPa		
	47	12												11.32m B, 0°, PR, SN Fe, RF 11.33m DS, 50mm			PLT	PL(A)=1.6MPa		
	46	13	13.25m-15.20m: purple and orange staining						SW					12.31m: B, 10°, PR, CT Clay 1mm, RF			PLT	PL(A)=1.3MPa		
	45	14												12.85m B, 10°, IR, SN Fe, RF 13.04m: B, 0°, IR, SN Fe, RF			PLT	PL(A)=2.2MPa		
	44	15															PLT	PL(A)=1.3MPa		
	43	16	15.58m-15.72m: siltstone band; dark grey 15.88m-16.30m: siltstone clasts											15.24m: DS, 20 mm			PLT	PL(A)=0.28MPa		
	42	16.50	SANDSTONE: pale grey-grey, medium to coarse grained; indistinctly bedded; with frequent dark grey sub-horizontal siltstone laminations. Hawkesbury Sandstone											15.89m: , 30mm, SLST Clast 16.07m: , 20mm, SLST Clast 16.12m: , 20mm, SLST Clast 16.30m: B, 5°, PR, CT Clay 1mm, SM			PLT	PL(A)=0.28MPa		
	41	17												17.10m: B, 5°, PR, CT Clay 2mm, RF			PLT	PL(A)=0.63MPa		
	40	18							FR								PLT	PL(A)=1.1MPa		
	39	19															PLT	PL(A)=0.94MPa		
																	PLT	PL(A)=0.80MPa		

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.

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: Hand Tools and Proline

OPERATOR: TightSite (BB)

LOGGED: J.Miller

METHOD: 200mm Ø DT to 0.30m, HA to 0.43m, HQ to 0.68m, NMLC to 25.0m

CASING: HW to 0.6m

REMARKS: No free groundwater observed whilst augering. Concrete and gatic cover on top of well. Surface level obtained from survey plans by RPS
 AAP Consulting AU2130xxxxx-001-A-Boreholes.
 Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd

PROJECT: Proposed Redevelopment

LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 58.4 AHD

COORDINATE: E:334117.0, N:6254339.4

DATUM/GRID: MGA2020 Zone 56

DIP/AZIMUTH: 90°/---°

LOCATION ID: BH101/MW01

PROJECT No: 86964.03

DATE: 16/09/24

SHEET: 3 of 3

CONDITIONS ENCOUNTERED														SAMPLE				TESTING				
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK							SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
					ORIGIN ^(#)	CONSIS. ^(*)	DENSITY. ^(*)	MOISTURE	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD	FRACTURE SPACING (m)								
	36	21	[CONT] SANDSTONE: pale grey-grey, medium to coarse grained; indistinctly bedded; with frequent dark grey sub-horizontal siltstone laminations. Hawkesbury Sandstone																			
	37	22	22.36m-22.42m: siltstone band; dark grey																			
	36	23	Borehole discontinued at 22.55m depth. Target depth reached.																			
		24																				
		25																				
		26																				
		27																				
		28																				
		29																				

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: Hand Tools and Proline

OPERATOR: TightSite (BB)

LOGGED: J.Miller

METHOD: 200mm Ø DT to 0.30m, HA to 0.43m, HQ to 0.68m, NMLC to 25.0m

CASING: HW to 0.6m

REMARKS: No free groundwater observed whilst augering. Concrete and gatic cover on top of well. Surface level obtained from survey plans by RPS AAP Consulting AU2130xxxxxx-001-A-Boreholes.

Refer to explanatory notes for symbol and abbreviation definitions



CORE PHOTO LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 58.4 AHD
COORDINATE: E:334117.0, N:6254339.4
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH101/MW01
PROJECT No: 86964.03
DATE: 16/09/24
SHEET: 1 of 3



0.68-5.00 m depth



5.00-10.00 m depth

CORE PHOTO LOG

CLIENT: Investa Commercial Developments Pty Ltd

PROJECT: Proposed Redevelopment

LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 58.4 AHD

COORDINATE: E:334117.0, N:6254339.4

DATUM/GRID: MGA2020 Zone 56

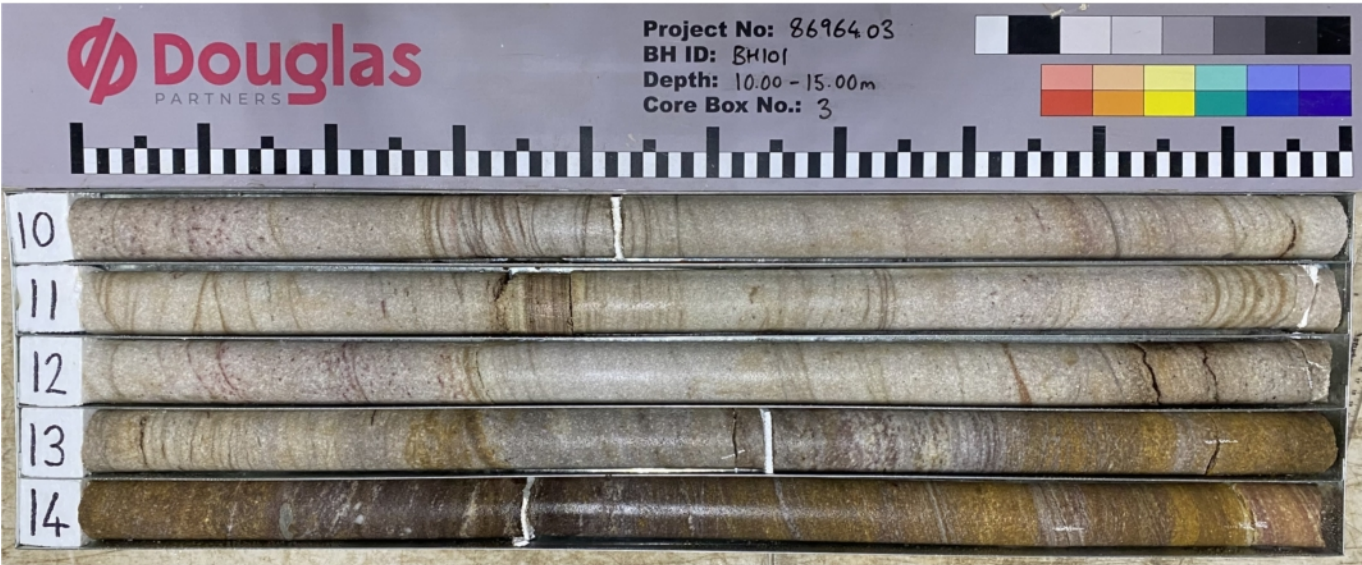
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH101/MW01

PROJECT No: 86964.03

DATE: 16/09/24

SHEET: 2 of 3



10.00-15.00 m depth



15.00-20.00 m depth

CORE PHOTO LOG

CLIENT: Investa Commercial Developments Pty Ltd

PROJECT: Proposed Redevelopment

LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 58.4 AHD

COORDINATE: E:334117.0, N:6254339.4

DATUM/GRID: MGA2020 Zone 56

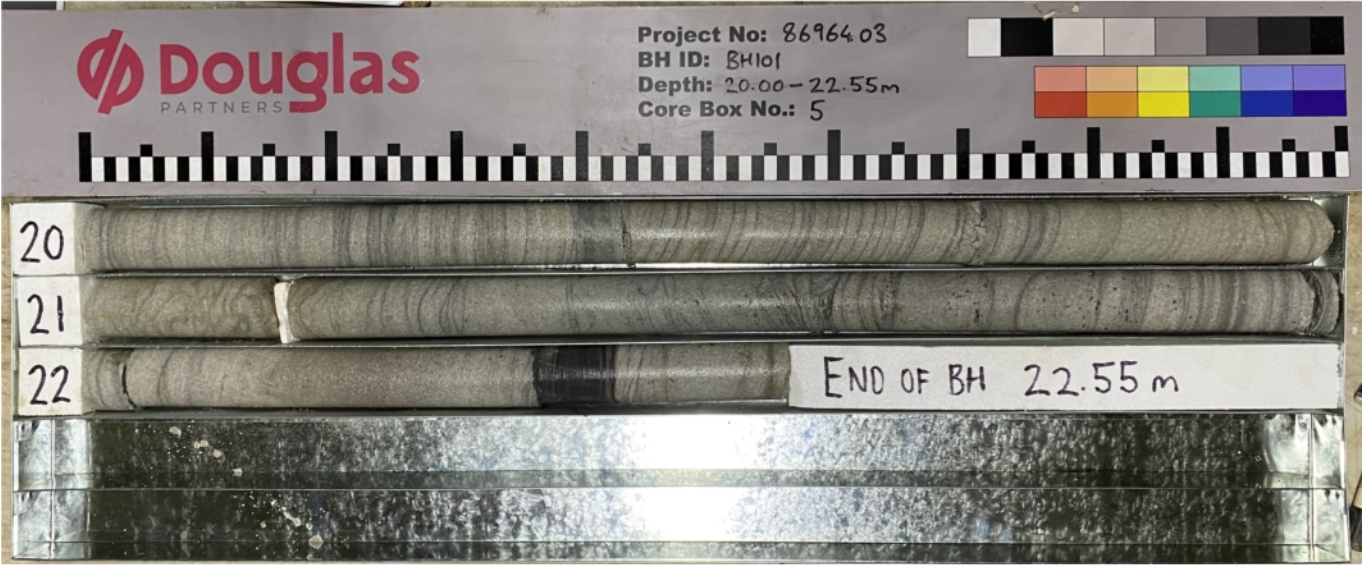
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH101/MW01

PROJECT No: 86964.03

DATE: 16/09/24

SHEET: 3 of 3



20.00-22.55 m depth

BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334172.0, N:6254300.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH102/MW02
PROJECT No: 86964.03
DATE: 23/09/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED													SAMPLE			TESTING					
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	SOIL			ROCK						SAMPLE REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS	BACKFILL	WELL PIPE
					ORIGIN (#)	CONSIS. (°)	DENSITY (°)	MOISTURE	WEATH.	DEPTH (m)	STRENGTH	RECOVERY (%)	RQD								
		0.22	CONCRETE SLAB: 220mm thick, 5mm Ø rebar at 130mm depth; 20mm aggregate, 2mm voids																		
		0.33																			
		0.50	CONCRETE SLAB: 80 mm thick, 20mm aggregate, 2mm voids																		
		0.54																			
		1	FILL / GRAVEL: grey; coarse, sub-angular, igneous; drainage gravel.																		
		2	FILL / SAND, with gravel: orange-brown; medium; fine, sandstone and ironstone gravel; ripped sandstone.																		
		3	SANDSTONE: pale grey, medium to coarse grained, indistinctly bedded. Hawkesbury Sandstone																		
		4																			
		5																			
		6																			
		7																			
		8	Borehole discontinued at 8.00m depth. Target depth reached.																		
		9																			

24/09/24

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NOTES: ¹Soil origin is "probable" unless otherwise stated. ²Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

PLANT: Hand Tools and Proline

OPERATOR: TightSite (BB)

LOGGED: J.Miller

METHOD: 200mm Ø DT to 0.33m, HA to 0.54m, NMLC to 8.00m

CASING: HW to 0.6m

REMARKS: No free groundwater observed whilst augering. Concrete and gatic cover on top or well. Surface level obtained from survey plans by RPS
 AAP Consulting AU2130xxxxx-001-A-Boreholes.
 Refer to explanatory notes for symbol and abbreviation definitions



CORE PHOTO LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334172.0, N:6254300.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH102/MW02
PROJECT No: 86964.03
DATE: 23/09/24
SHEET: 1 of 3



0.68-5.00 m depth



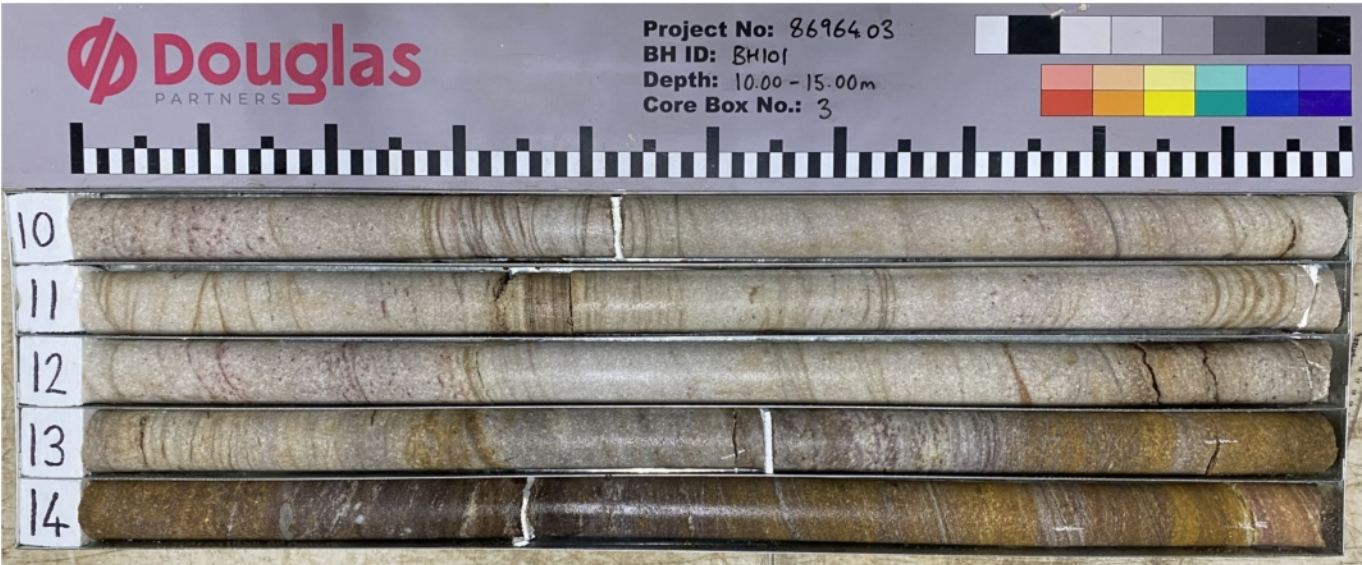
5.00-10.00 m depth

CORE PHOTO LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334172.0, N:6254300.8
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH102/MW02
PROJECT No: 86964.03
DATE: 23/09/24
SHEET: 2 of 3



10.00-15.00 m depth



15.00-20.00 m depth

CORE PHOTO LOG

CLIENT: Investa Commercial Developments Pty Ltd

PROJECT: Proposed Redevelopment

LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD

COORDINATE: E:334172.0, N:6254300.8

DATUM/GRID: MGA2020 Zone 56

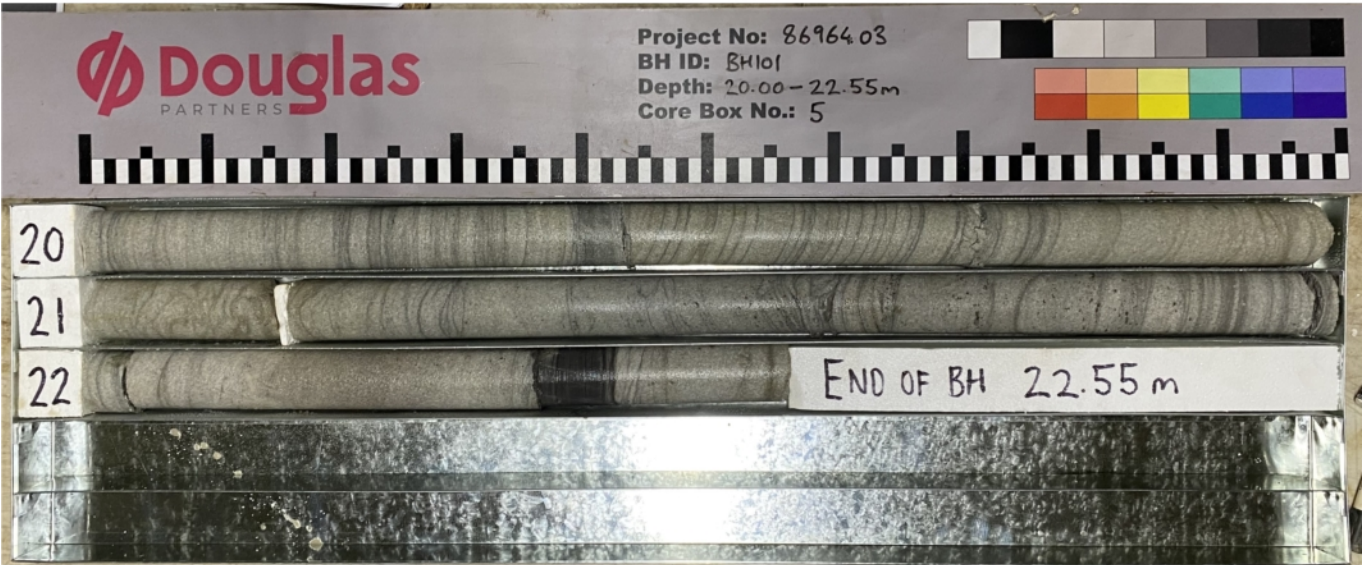
DIP/AZIMUTH: 90°/---°

LOCATION ID: BH102/MW02

PROJECT No: 86964.03

DATE: 23/09/24

SHEET: 3 of 3



20.00-22.55 m depth

BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 58.4 AHD
COORDINATE: E:334126.0, N:6254311.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA01
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

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				
27/08/24 No free groundwater observed.			CONCRETE.					NA										
		0.22	BITUMEN: dark grey; 20mm bituminous membrane layer.			ND												
		0.24		CONCRETE.														
		0.35	FILL / Silty GRAVEL: grey to dark grey; medium to coarse; low to medium plasticity silt.					M			ES		0.35	PID	<1ppm			
											0.40							
Borehole discontinued at 0.50m depth. Refusal on inferred sandstone.																		

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.

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions

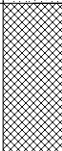


BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 58.4 AHD
COORDINATE: E:334121.0, N:6254283.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA02
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

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				
27/08/24 No free groundwater observed.	2.30		CONCRETE.			ND		NA										
		0.22	BITUMEN: dark grey; 20mm bituminous membrane layer.															
		0.24																
		0.35	FILL / GRAVEL, trace sand: grey and pale brown; medium to coarse; fine to coarse sand.		FILL		M		ES		0.35	PID	<1ppm					
Borehole discontinued at 0.45m depth. Refusal on inferred sandstone.																		

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.

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 58.4 AHD
COORDINATE: E:334163.0, N:6254337.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA03
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

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				
27/08/24 No free groundwater observed.			CONCRETE.					NA										
		0.20	BITUMEN: dark grey; 20mm bituminous membrane layer.															
		0.22																
		0.30	FILL / GRAVEL: grey; coarse.															
		0.45	FILL / SAND, trace gravel: pale grey and yellow brown; fine to coarse; sandstone gravel.															
Borehole discontinued at 0.55m depth. Refusal on inferred sandstone.																		

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.

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Blind replicate collected at 0.45-0.55 m depth. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334159.0, N:6254290.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA04
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

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					
27/08/24 No free groundwater observed.			CONCRETE.					NA											
		0.25 0.27	BITUMEN: dark grey; 20 mm bituminous membrane layer. CONCRETE.																
		0.35	FILL / Silty Sandy GRAVEL: grey to dark grey; medium to coarse; low to medium plasticity silt; fine to coarse sand.		FILL			W		ES		0.35	PID	<1ppm					
Borehole discontinued at 0.40m depth. Refusal on inferred sandstone.																			

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.

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions

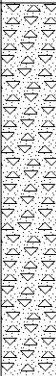


BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334140.0, N:6254277.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA05
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

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				
27/08/24 No free groundwater observed.			CONCRETE.					NA										
		0.25	BITUMEN: dark grey; 20mm bituminous membrane layer.															
		0.27	CONCRETE.															
		0.30	FILL / GRAVEL: dark grey; medium to coarse; apparently well compacted. Trace weathered sandstone at 0.45m depth.					M										

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334120.0, N:6254280.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA06
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

CONDITIONS ENCOUNTERED														SAMPLE			TESTING AND REMARKS	
GROUNDWATER	RL (m)	DEPTH (m)	DESCRIPTION OF STRATA	GRAPHIC	ORIGIN (#)	CONSIS. ⁽¹⁾	DENSITY. ⁽²⁾	MOISTURE	REMARKS	TYPE	INTERVAL	DEPTH (m)	TEST TYPE	RESULTS AND REMARKS				
27/08/24 No free groundwater observed.			CONCRETE.					NA										
		0.25 0.27	BITUMEN: dark grey; 20mm bituminous membrane layer. CONCRETE.			ND												
		0.35	FILL / GRAVEL: grey; medium to coarse; Trace sand at 0.45 m depth.		FILL			M										
			Borehole discontinued at 0.50m depth. Refusal on inferred sandstone.															

ES

PID

<1ppm

NOTES: ^(#)Soil origin is "probable" unless otherwise stated. ⁽¹⁾Consistency/Relative density shading is for visual reference only - no correlation between cohesive and granular materials is implied.

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334124.0, N:6254324.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA07
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

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						
27/08/24 No free groundwater observed.			CONCRETE.					NA												
		0.20	BITUMEN: dark grey; 20mm bituminous membrane layer.			ND														
		0.22		CONCRETE.																
		0.30	FILL / Sandy GRAVEL: grey to dark grey; medium to coarse; fine to coarse sand.		FILL		M													
			Borehole discontinued at 0.50m depth. Refusal on inferred sandstone.							ES		0.45	PID	<1ppm						
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.																				

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334159.0, N:6254364.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA08
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

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					
27/08/24: No free groundwater observed.			CONCRETE.					NA											
		0.25 0.27	BITUMEN: dark grey; 20mm bituminous membrane layer. CONCRETE.			ND													
		0.35	FILL / Silty Sandy GRAVEL: grey to dark grey; medium to coarse; low to medium plasticity silt.		FILL			M		ES		0.40 0.45	PID	<1ppm					
Borehole discontinued at 0.50m depth. Refusal on inferred sandstone.																			

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334140.0, N:6254366.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA09
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

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				
27/08/24 No free groundwater observed.			CONCRETE.															
		0.20						M										
		0.22	BITUMEN: dark grey; 20mm bituminous membrane layer.			ND												
			CONCRETE.															
		0.30	FILL / Sandy GRAVEL: grey to dark grey gravel with yellow-brown sand; medium to coarse; fine to coarse sand.		FILL			NA										
										ES		0.30	PID	<1ppm				
										ES		0.35	PID	<1ppm				
										ES		0.40	PID	<1ppm				
			Borehole discontinued at 0.45m depth. Refusal on inferred sandstone.															

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.

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions



BOREHOLE LOG

CLIENT: Investa Commercial Developments Pty Ltd
PROJECT: Proposed Redevelopment
LOCATION: 105 Miller Street, North Sydney, NSW

SURFACE LEVEL: 54.0 AHD
COORDINATE: E:334149.0, N:6254304.0
DATUM/GRID: MGA2020 Zone 56
DIP/AZIMUTH: 90°/---°

LOCATION ID: HA10
PROJECT No: 86964.03
DATE: 27/08/24
SHEET: 1 of 1

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					
27/08/24, No free groundwater observed.			CONCRETE.					NA											
		0.20	BITUMEN: dark grey; 20mm bituminous membrane layer.			ND													
		0.22																	
		0.30	FILL / Silty GRAVEL: grey and brown; medium to coarse; low to medium plasticity silt.		FILL					ES	PID	<1ppm							
		0.35	FILL / SAND: pale brown; fine to coarse; with fine to medium sized gravel.		FILL		M			ES									
			Borehole discontinued at 0.40m depth. Refusal on inferred sandstone.																

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.

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: Hand auger, 80 mm diameter

OPERATOR: (JCC)

LOGGED: JCC/IR

METHOD: Hand auger

CASING: Uncased

REMARKS: No free groundwater observed. Coordinates estimated using aerial imagery. Relative level estimated from publicly available LIDAR data

Refer to explanatory notes for symbol and abbreviation definitions

Project and Bore Installation Details				
Project Name / Site Location		86 964.04 North Sydney		Project Number
Well Construction Details	Well ID	BH101/MW	Drilling Method	N-M-L-C
	Well Depth (m bgl)		Screened (m bgl)	Stick Up (m)
Survey Information	Easting		Northing	Elevation RL
CW Level During Drilling		m bgl		
Contaminants/Comments				

Well Development Details				
Date / Time / Weather Conditions				Purged By
Purge Method / Equipment	Twister pump			
Product observed / Thickness	mm	Confirmed with Bailer? (Y / N)		
GW Level (pre-purge)	15.77	m bgl	Observed Well Depth	m bgl
Height of Water Column (H)	3.23	m bgl	Estimated Bore Volume*	L
GW Level (post-purge)	6x14.86	m bgl	Total Volume Purged**	L
Appearance/Comments	pale brown, no odor			

Sampling Details					
Date / Time / Weather Conditions	30/09 1pm			Sampled By	IR
Sampling Method / Equipment	GYS11 bladder pump				
WQM Model			WQM Calibration Date		
Product observed / Thickness		mm	Confirmed with Bailer? (Y / N)		
GW Level (pre-micropurge)	11.73	m bgl	Observed Well Depth	15.12	
Height of Water Column	~ 3.5	m bgl	Estimated Bore Volume*	L	
GW Level (post sample)		m bgl	Total Volume of Micro-Purged	L	

[illegible]

Sample Details					
Sampling Depth (rationale)		m bgl,			
Sample Observations (e.g. colour, sediment, sheen, odour)					
Sample ID					
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

Project and Bore Installation Details					
Project Name / Site Location	Nth. Sydney			Project Number	
Well Construction Details	Well ID	BH102	Drilling Method		Hole Diameter (m)
	Well Depth (m bgl)	MW02	Screened (m bgl)		Stick Up (m)
Survey Information	Easting		Northing		Elevation RL
GW Level During Drilling		m bgl			
Contaminants/Comments					

Well Development Details				
Date / Time / Weather Conditions				Purged By
Purge Method / Equipment				
Product observed / Thickness		mm	Confirmed with Bailer? (Y / N)	
CW Level (pre-purge)		m bgl	Observed Well Depth	m bgl
Height of Water Column (H)		m bgl	Estimated Bore Volume*	L
GW Level (post-purge)		m bgl	Total Volume Purged**	L
Appearance/Comments				

Sampling Details				
Date / Time / Weather Conditions			Sampled By	
Sampling Method / Equipment				
WQM Model		WQM Calibration Date		
Product observed / Thickness		Confirmed with Bailer? (Y / N)		
GW Level (pre-micropurge)	4.22	m bgl	Observed Well Depth	5.12
Height of Water Column	0.9	m bgl	Estimated Bore Volume	2.7
GW Level (post sample)	4.67	m bgl	Total Volume of Micro-Purged	5.10L

[illegible]

Sample Details						
Sampling Depth (rationale)		m bgl,				
Sample Observations (e.g. colour, sediment, sheen, odour)						
Sample ID						
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

Soil Vapour Sampling Sheet						
Project and Bore Installation Details						
Project Name:						
Project Number:	86964.04					
Client:						
Sample ID / Bore No.						
Site Location:	North Sydney					
GPS Co-ord:						
Elevation (RL, m AHD)						
Installation Date:	27/8/24					
Well / Pin Construction Details	V301					
Weather	Humidity	28%	Temperature	25°C	Barometric	1007
Canister Flow Controller	mL/min					
Carbon / TD Tube Flow Controller	mL/min Type Rotameter, flow flow adaptor and vacuum gauge					
Pump ID						
Date/Time:	28/8/24 12:30					
Sampled By:	JC / LR					
Purge Details / Field Readings						
Pre Purge PID Reading	0		ppm			
Bulk Gas readings	Time	Concentration (% v/v)			H ₂ S (ppm)	CO (ppm)
		CH ₄	CO ₂	O ₂		
	12:30	0	0	20.9	0	0
Purge Method	carbon tube					
Post Purge PID Reading	0		ppm			
Approximate Volume Purged	500		L			
Pre-Start QA Tests						
Shut In Test						
	Canister		Carbon Tube / TD Setup			
Vacuum Applied	-28	in Hg	62.1 in H ₂ O		kPa	
Duration	30s	min	0.5		min	
Pass / Fail	pass		pass			
Leak Test	PID in Sample Train		PID in Shroud			
	5	ppm	485		ppm	
Pass / Fail	pass					
Sampling Details - Primary						
	Canister		Carbon Tube / TD Tube			
ID Number	2267		2626007864			
Regulator Number	1874		N/A			
Start Time	12:35	min	12:30		min	
Start Vacuum	-28	in Hg	0.2 in H ₂ O		kPa	
Stop Time	1:45	min	5		min	
Stop Vacuum	-7	in Hg			kPa	
Approximate Sample Volume	mL		mL			
Note: recommended end vacuum of -7 in Hg (~75% full)			Note: recommended < 2.5 kPa induced vacuum (ASTM)			
Sampling Details - Replicate						
	Canister		Carbon Tube / TD Tube			
ID Number						
Regulator Number			N/A			
Start Time		min			min	
Start Vacuum		in Hg			kPa	
Stop Time		min			min	
Stop Vacuum		in Hg			kPa	
Approximate Sample Volume	mL		mL			
Sampling Details - Shroud						
Carbon / TD Tube ID						
Start Time		min				
Stop Time		min				
Sample Time		min				
Approximate Sample Volume	mL					
Comments / Observations:						

Soil Vapour Sampling Sheet						
Project and Bore Installation Details						
Project Name:						
Project Number:	86964.04					
Client:						
Sample ID / Bore No.:	SV02					
Site Location:	North Sydney					
GPS Co-ord:						
Elevation (RL, m AHD):						
Installation Date:	27/8/24					
Well / Pin Construction Details:	Soil vapour pin					
Weather:	Humidity	28%	Temperature	25°C	Barometric	1007
Canister Flow Controller:	mL/min					
Carbon / TD Tube Flow Controller:	mL/min		Type	Rotameter, flow flow adaptor and vacuum gauge		
Pump ID:						
Date/Time:	1:15pm 28/8/24					
Sampled By:	IR/jc					
Purge Details / Field Readings						
Pre Purge PID Reading:	0		ppm			
Bulk Gas readings	Time	Concentration (% v/v)			H ₂ S (ppm)	CO (ppm)
		CH ₄	CO ₂	O ₂		
	1:20	0	0	20.9	0	0
Purge Method:	Carbon tube					
Post Purge PID Reading:	1		ppm			
Approximate Volume Purged:	500		L			
Pre-Start QA Tests						
Shut In Test						
	Canister			Carbon Tube / TD Setup		
Vacuum Applied:	-30	in Hg	62.1 in H ₂ O		kPa	
Duration:	1 min	min	1 min		min	
Pass / Fail:	pass					
Leak Test						
	PID in Sample Train			PID in Shroud		
	0	ppm	225		ppm	
Pass / Fail:	pass					
Sampling Details - Primary						
	Canister			Carbon Tube / TD Tube		
ID Number:	2467			2626007862		
Regulator Number:	2341			N/A		
Start Time:		min	1:02		min	
Start Vacuum:	-29	in Hg	5 1.2 in H ₂ O		kPa	
Stop Time:		min	6 1.2 in H ₂ O		min	
Stop Vacuum:		in Hg			kPa	
Approximate Sample Volume:		mL			mL	
			Note: recommended end vacuum of -7 in Hg (~75% full)			
			Note: recommended < 2.5 kPa induced vacuum (ASTM)			
Sampling Details - Replicate						
	Canister			Carbon Tube / TD Tube		
ID Number:				N/A		
Regulator Number:						
Start Time:		min			min	
Start Vacuum:		in Hg			kPa	
Stop Time:		min			min	
Stop Vacuum:		in Hg			kPa	
Approximate Sample Volume:		mL			mL	
Sampling Details - Shroud						
Carbon / TD Tube ID:						
Start Time:		min				
Stop Time:		min				
Sample Time:		min				
Approximate Sample Volume:		mL				
Comments / Observations:						

Soil Vapour Sampling Sheet						
Project and Bore Installation Details						
Project Name:						
Project Number:	86964.04					
Client:						
Sample ID / Bore No.:	SV3					
Site Location:	North Sydney					
GPS Co-ord:						
Elevation (RL, m AHD):						
Installation Date:	27/8/24					
Well / Pin Construction Details:	soil vapour pin					
Weather:	Humidity	28%	Temperature	25°	Barometric	1007
Canister Flow Controller:	100	mL/min				
Carbon / TD Tube Flow Controller:		mL/min	Type	Rotameter, flow flow adaptor and vacuum gauge		
Pump ID:	SEC					
Date/Time:	10:00 am 28/08/24					
Sampled By:	IK/JC					
Purge Details / Field Readings						
Pre Purge PID Reading:	5	ppm				
Bulk Gas readings	Time	Concentration (% v/v)		H ₂ S (ppm)	CO (ppm)	
		CH ₄	CO ₂	O ₂		
	11:20	0	0	20.9	0.6	0
Purge Method:	carbon tube					
Post Purge PID Reading:	2	ppm				
Approximate Volume Purged:	500	mL				
Pre-Start QA Tests						
Shut In Test						
Vacuum Applied:	-30	Canister	2626007870	Carbon Tube / TD Setup	43	kPa
Duration:	1m	min		1	min	
Pass / Fail:	pass			pass		
Leak Test:	PID in Sample Train		5	PID in Shroud		447
Pass / Fail:	pass	ppm		ppm		
Sampling Details - Primary						
ID Number:	3282	Canister	2084	Carbon Tube / TD Tube	24626007871	
Regulator Number:	2084			N/A		
Start Time:	11:45	min		11:30	min	
Start Vacuum:	-24	in Hg		1.2 in H ₂ O	kPa	
Stop Time:	12:00	min		5m	min	
Stop Vacuum:	-7	in Hg		1.2 in H ₂ O	kPa	
Approximate Sample Volume:		mL		500	mL	
			Note: recommended end vacuum of -7 in Hg (~75% full)			
			Note: recommended < 2.5 kPa induced vacuum (ASTM)			
Sampling Details - Replicate						
ID Number:	3276	Canister	2084	Carbon Tube / TD Tube	2626007870	
Regulator Number:	2084			N/A		
Start Time:	11:45	min		11:35	min	
Start Vacuum:	-24	in Hg		1.2 in H ₂ O	kPa	
Stop Time:	12:00	min		5m	min	
Stop Vacuum:	-7	in Hg		1.2 in H ₂ O	kPa	
Approximate Sample Volume:		mL		500 ml	mL	
Sampling Details - Shroud						
Carbon / TD Tube ID:	2626007867					
Start Time:	11:30	min				
Stop Time:	11:35	min				
Sample Time:	5m	min				
Approximate Sample Volume:	~200	mL				
Comments / Observations:						

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

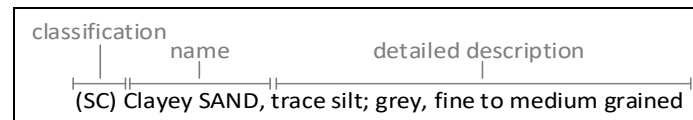
Douglas Partners' logs contain a "graphic" column which provides a pictorial representation of the basic composition of the material. The symbols used are directly representing the material name stated in the adjacent "Description of Strata" column, and as such no specific graphic symbology legend has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

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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	Sand
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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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:

SAMPLE			DEPTH (m)	TESTING	
SAMPLE REMARKS	TYPE	INTERVAL		TEST TYPE	RESULTS AND REMARKS
	SPT		1.0 1.45	SPT	4,9,11 N=20

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
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(L)
Dynamic cone penetrometer, followed by blow count penetration increment in mm (cone tip, generally in accordance with AS1289.6.3.2)	DCP/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
Vibrocure	VC ¹
Vacuum excavation	VE
Wash bore (unspecified bit type)	WB ¹

¹ – numeric suffixes indicate tool diameter/width in mm

Appendix H

Quality Assurance and Quality Control

Tables QA1 - QA7

1. Field and laboratory 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 1. 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 at the end of this appendix.

Table 1: 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	5-10% of primary samples; <30% RPD	PC
Trip Spikes	1 per sampling event; 60-140% recovery	C
Trip Blanks	1 per sampling event; <PQL	C
Soil Vapour Tracer	IPA in sample <10% of shroud	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 Table QA5 (results in bold). The exceedances are not, however, considered to be of concern given that:

- The actual differences in the concentrations of the replicate pairs where RPD exceedances occurred were typically low;
- Replicates, rather than homogenised duplicates, were used to minimise risk of volatile loss, hence greater analytical variability between replicate pairs can be expected;

- Most of the recorded concentrations were relatively close to the PQL;
- The majority of RPD results from a replicate pair were within the acceptable limits; and
- All other QA / QC parameters met the data quality indicators.

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

2. Data quality indicators

The reliability of field procedures and analytical results was assessed against the following data quality indicators (DQI) as outlined in NEPC *National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) [NEPM]* (NEPC, 2013):

- Completeness: a measure of the amount of usable data from a data collection activity;
- Comparability: the confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness: the confidence (qualitative) of data representativeness of media present on-site;
- Precision: a measure of variability or reproducibility of data; and
- Accuracy: a measure of closeness of the data to the 'true' value.

Table 2: Data quality indicators

Data quality indicator	Method(s) of achievement
Completeness	Systematic locations sampled.
	Preparation of borehole logs, sample location plan and chain of custody records.
	Preparation of field groundwater and soil vapour sampling sheets.
	Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody.
	Samples analysed for contaminants of potential concern (COPC) identified in the conceptual site model (CSM).
	Completion of chain of custody (COC) documentation.
	NATA accredited laboratory results certificates provided by the laboratory.
	Satisfactory frequency and results for field and laboratory quality control (QC) samples as discussed in Section 1.
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project.
	Experienced sampler(s) used.
	Satisfactory results for field and laboratory QC samples.

Data quality indicator	Method(s) of achievement
Representativeness	Target media sampled.
	Sample numbers recovered and analysed are considered to be representative of the target media and complying with DQO.
	Samples were extracted and analysed within holding times.
	Samples were analysed in accordance with the COC.
Precision	Field staff followed standard operating procedures.
	Acceptable RPD between original samples and replicates.
	Satisfactory results for all other field and laboratory QC samples.
Accuracy	Field staff followed standard operating procedures.
	Satisfactory results for all field and laboratory QC samples.

Based on the above, it is considered that the DQI have been generally complied with.

3. Conclusion

Based on the results of the field QA and field and laboratory QC, and evaluation against the DQI it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

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.





Table QA2: Trip Blank Results - Soiland Groundwater Sampling

Sample ID	Sample Date	Media Being Sampled	Sample Type	Units	Priority PAH	Priority TRH		TRH	BTEX				Lab Report No
					Naphthalene ^b	TRH C6 - C10	FI [(C6-C10)-BTEX]	TRH C6 - C9	Benzene	Toluene	Ethylbenzene	Total Xylenes	
TB (soil)	27/08/24	Soil	Soil	mg/kg	<1	<25	<25	<25	<0.2	<0.5	<1	<1	360433
TB (groundwater)	30/09/2024	Water	Water	mg/L	-	-	-	-	<0.001	<0.001	<0.001	<0.001	362930



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

Sample ID	Sample Date	Media Being Sampled	Sample Type	Benzene	Toluene	Ethylbenzene	o-Xylene	m+p-Xylene	Lab Report No
TS (soil)	27/08/24	Soil	Soil	101	102	101	102	102	360433
TS (groundwater)	30/09/2024	Water	Water	113	112	118	118	112	362930



Table QA4: IPA Leakage Test Results – Vapour Sampling

Sample ID	Sample Date	Isopropyl Alcohol (IPA)	IPA as a percentage of concentration in Shroud sample
		µg/m3	%
SV Sampling			
Shroud Sample (where tracer added)			
Shroud - Back	28/08/24	390,000	-
Soil Vapour Samples			
SV1	28/08/24	150	0.0385%
SV2	28/08/24	470	0.1205%
SV3	28/08/24	1000	0.2564%
BD1	28/08/24	40	0.0103%



Table QA5: Relative Percentage Difference Results – Water Sampling

Lab Report No		362930	362930		
Sample ID		MW01	BD1		
Sample Date		30/09/24	30/09/24	Difference	RPD
Sample Type		Water	Water		
Units		mg/L	mg/L	mg/L	%
Metals - Dissolved	Total Arsenic	<0.001	<0.001	-	-
	Cadmium	<0.0001	<0.0001	-	-
	Total Chromium	<0.001	<0.001	-	-
	Copper	0.044	0.047	0.003	7%
	Lead	<0.001	0.001	-	-
	Mercury (inorganic)	<0.00005	<0.00005	-	-
	Nickel	0.024	0.029	0.01	19%
	Zinc	0.062	0.069	0.01	11%
TRH	F1 ((C6-C10)-BTEX)	0.047	0.042	0.005	11%
	F2 (>C10-C16 less Nap)	<0.05	0.13	0.08	89%
	F3 (>C16-C34)	<0.1	<0.2	-	-
	F4 (>C34-C40)	<0.1	<0.2	-	-
BTEX	Benzene	<0.001	<0.001	-	-
	Toluene	<0.001	<0.001	-	-
	Ethylbenzene	<0.001	<0.001	-	-
PAH	Naphthalene	<0.001	<0.001	-	-
	Benzo(a)pyrene (B(a)P)	<0.0001	<0.0002	-	-
	Sum of detected PAH	<0.0001	<0.0002	-	-
BTEX	o-Xylene	<1	<1	-	-
	m+p-Xylene	<2	<2	-	-
	Total Xylenes	<1	<1	-	-
PAH	Acenaphthene	<0.1	<0.2	-	-
	Acenaphthylene	<0.1	<0.2	-	-
	Anthracene	<0.1	<0.2	-	-
	Benzo(a)anthracene	<0.1	<0.2	-	-
	Benzo(b,j+k)fluoranthene	<0.2	<0.4	-	-
	Benzo(g,h,i)perylene	<0.1	<0.2	-	-
	Chrysene	<0.1	<0.2	-	-
	Dibenzo(a,h)anthracene	<0.1	<0.2	-	-
	Fluoranthene	<0.1	<0.2	-	-
	Fluorene	<0.1	<0.2	-	-
	Indeno(1,2,3-c,d)pyrene	<0.1	<0.2	-	-
	Phenanthrene	<0.1	<0.2	-	-
	Pyrene	<0.1	<0.2	-	-



Table QA5: Relative Percentage Difference Results – Water Sampling

Lab Report No		362930	362930		
Sample ID		MW01	BD1		
Sample Date		30/09/24	30/09/24	Difference	RPD
Sample Type		Water	Water		
Units		mg/L	mg/L	mg/L	%
VOC (excluding BTEX)	Sum of detected PAH	<0.1	<0.2	-	-
	1,1,1,2-tetrachloroethane	<1	<1	-	-
	1,1,1-trichloroethane	<1	<1	-	-
	1,1,2,2-tetrachloroethane	<1	<1	-	-
	tetrachloroethene	<1	<1	-	-
	1,1,2-trichloroethane	<1	<1	-	-
	1,1,2-trichloroethylene	<1	<1	-	-
	1,1-dichloroethane	<1	<1	-	-
	1,1-Dichloroethene	<1	<1	-	-
	1,1-dichloropropene	<1	<1	-	-
	1,2,3-trichlorobenzene	<1	<1	-	-
	1,2,3-trichloropropane	<1	<1	-	-
	1,2,4-trichlorobenzene	<1	<1	-	-
	1,2,4-trimethyl benzene	<1	<1	-	-
	1,2-dibromo-3-chloropropane	<1	<1	-	-
	1,2-dichlorobenzene	<1	<1	-	-
	1,2-dichloroethane	<1	<1	-	-
	1,2-dichloropropane	<1	<1	-	-
	1,3,5-trimethyl benzene	<1	<1	-	-
	1,3-dichlorobenzene	<1	<1	-	-
	1,3-dichloropropane	<1	<1	-	-
	1,4-dichlorobenzene	<1	<1	-	-
	2,2-dichloropropane	<1	<1	-	-
	2-chlorotoluene	<1	<1	-	-
	4-chlorotoluene	<1	<1	-	-
	4-isopropyl toluene	<1	<1	-	-
	Bromobenzene	<1	<1	-	-
	Bromochloromethane	<1	<1	-	-
	Bromodichloromethane	6	6	0	0%
	Bromoform	<1	<1	-	-
	carbon tetrachloride	<1	<1	-	-
	Chloroethane	<10	<10	-	-
	Vinyl Chloride	<10	<10	-	-
	Chloroform	45	45	0	0%



Table QA5: Relative Percentage Difference Results – Water Sampling

Lab Report No		362930	362930		
Sample ID		MW01	BD1		
Sample Date		30/09/24	30/09/24	Difference	RPD
Sample Type		Water	Water		
Units		mg/L	mg/L	mg/L	%
	Chloromethane	<10	<10	-	-
	cis-1,2-dichloroethene	<1	<1	-	-
	cis-1,3-dichloropropane	<1	<1	-	-
	Isopropylbenzene (cumene)	<1	<1	-	-
	Cyclohexane	<1	<1	-	-
	1,1-dibromochloromethane	<1	1	0	0%
	Dibromomethane	<1	<1	-	-
	Dichlorodifluoromethane	<10	<10	-	-
	1,2-dibromoethane	<1	<1	-	-
	hexachlorobutadiene	<1	<1	-	-
	Bromomethane	<10	<10	-	-
	Monochlorobenzene	<1	<1	-	-
	n-butyl benzene	<1	<1	-	-
	n-propyl benzene	<1	<1	-	-
	sec-butyl benzene	<1	<1	-	-
	Styrene (vinylbenzene)	<1	<1	-	-
	Tert-butyl benzene	<1	<1	-	-
	trans-1,2-dichloroethene	<1	<1	-	-
	trans-1,3-dichloropropane	<1	<1	-	-
	Trichlorofluoromethane	<10	<10	-	-
	Sum of detected VOCs	51	52	1	2%



Table QA6: Trip Blank Results - Water Sampling

Sample ID		TB
Sample Date		30/09/24
Media Being Sampled		Water
Sample Type		Water
Units		mg/L
BTEX	Benzene	<0.001
	Toluene	<0.001
	Ethylbenzene	<0.001
Lab Report No		362930

Sample ID		TB
Sample Date		30/09/24
Media Being Sampled		Water
Sample Type		Water
Units		µg/L
BTEX	o-Xylene	<1
	m+p-Xylene	<2
	Total Xylenes	<1
Lab Report No		362930



Table QA7: Trip Spike Results – Water Sampling (% Recovery)

Sample ID	TS
Sample Date	30/09/24
Media Being Sampled	Water
Sample Type	Water
Benzene	0.113
Toluene	0.112
Ethylbenzene	0.118
o-Xylene	
m+p-Xylene	
Sample ID	TS
Sample Date	30/09/24
Media Being Sampled	Water
Sample Type	Water
Benzene	
Toluene	
Ethylbenzene	
o-Xylene	118
m+p-Xylene	112
Lab Report No	362930

Appendix I

Laboratory Certificates of Analysis, Sample Receipt
Advice and Chain of Custody Documentation

CERTIFICATE OF ANALYSIS 360433

Client Details

Client	Douglas Partners Pty Ltd
Attention	Huy Tran
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>86964.04 North Sydney</u>
Number of Samples	16 Soil
Date samples received	29/08/2024
Date completed instructions received	29/08/2024

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	05/09/2024
Date of Issue	05/09/2024
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Asbestos Approved By

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

Results Approved By

Diego Bigolin, Inorganics Supervisor
 Dragana Tomas, Senior Chemist
 Giovanni Agosti, Group Technical Manager
 Lucy Zhu, Asbestos Supervisor
 Timothy Toll, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		360433-1	360433-2	360433-3	360433-4	360433-5
Your Reference	UNITS	HA01	HA02	HA03	HA03	HA04
Depth		0.35-0.4	0.35-0.45	0.3-0.4	0.45-0.55	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	02/09/2024	02/09/2024	02/09/2024	02/09/2024	02/09/2024
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	%	78	90	93	91	94

vTRH(C6-C10)/BTEXN in Soil

Our Reference		360433-6	360433-7	360433-8	360433-9	360433-10
Your Reference	UNITS	HA05	HA06	HA07	HA08	HA09
Depth		0.35-0.45	0.35-0.45	0.45-0.5	0.4-0.45	0.3-0.35
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	02/09/2024	02/09/2024	02/09/2024	02/09/2024	02/09/2024
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	%	91	96	93	82	95

vTRH(C6-C10)/BTEXN in Soil

Our Reference		360433-11	360433-12	360433-13	360433-14	360433-15
Your Reference	UNITS	HA09	HA10	HA10	BD1/20240827	TS
Depth		0.35-0.4	0.3-0.35	0.35-0.4	-	-
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	02/09/2024	02/09/2024	02/09/2024	02/09/2024	02/09/2024
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	[NA]
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	[NA]
vTRH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	101%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	102%
Ethylbenzene	mg/kg	<1	<1	<1	<1	101%
m+p-xylene	mg/kg	<2	<2	<2	<2	102%
o-Xylene	mg/kg	<1	<1	<1	<1	102%
Naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	96	92	94	96	102

vTRH(C6-C10)/BTEXN in Soil

Our Reference		360433-16
Your Reference	UNITS	TB
Depth		-
Date Sampled		27/08/2024
Type of sample		Soil
Date extracted	-	30/08/2024
Date analysed	-	02/09/2024
TRH C ₆ - C ₉	mg/kg	<25
TRH C ₆ - C ₁₀	mg/kg	<25
vTRH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	82

svTRH (C10-C40) in Soil						
Our Reference	UNITS	360433-1	360433-2	360433-3	360433-4	360433-5
Your Reference		HA01	HA02	HA03	HA03	HA04
Depth		0.35-0.4	0.35-0.45	0.3-0.4	0.45-0.55	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	31/08/2024	31/08/2024	31/08/2024	31/08/2024	31/08/2024
TRH C ₁₀ - C ₁₄	mg/kg	52	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	810	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	720	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	1,600	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆	mg/kg	98	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	mg/kg	98	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	1,300	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	580	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	2,000	<50	<50	<50	<50
Surrogate o-Terphenyl	%	#	94	99	97	96

svTRH (C10-C40) in Soil						
Our Reference	UNITS	360433-6	360433-7	360433-8	360433-9	360433-10
Your Reference		HA05	HA06	HA07	HA08	HA09
Depth		0.35-0.45	0.35-0.45	0.45-0.5	0.4-0.45	0.3-0.35
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	31/08/2024	31/08/2024	31/08/2024	31/08/2024	31/08/2024
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	530	490
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	450	290
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	980	770
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	68	<50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	68	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	830	680
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	370	270
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	1,300	950
Surrogate o-Terphenyl	%	95	97	96	119	109

svTRH (C10-C40) in Soil

Our Reference		360433-11	360433-12	360433-13	360433-14
Your Reference	UNITS	HA09	HA10	HA10	BD1/20240827
Depth		0.35-0.4	0.3-0.35	0.35-0.4	-
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	31/08/2024	31/08/2024	31/08/2024	31/08/2024
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	140	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	150	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	290	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	240	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	150	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	380	<50
Surrogate o-Terphenyl	%	97	96	97	93

PAHs in Soil						
Our Reference	UNITS	360433-1	360433-2	360433-3	360433-4	360433-5
Your Reference		HA01	HA02	HA03	HA03	HA04
Depth		0.35-0.4	0.35-0.45	0.3-0.4	0.45-0.55	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	03/09/2024	03/09/2024	03/09/2024	03/09/2024	03/09/2024
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	0.2	<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	0.52	<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 <i>p</i> -Terphenyl-d14	%	101	95	91	97	97

PAHs in Soil						
Our Reference		360433-6	360433-7	360433-8	360433-9	360433-10
Your Reference	UNITS	HA05	HA06	HA07	HA08	HA09
Depth		0.35-0.45	0.35-0.45	0.45-0.5	0.4-0.45	0.3-0.35
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	03/09/2024	03/09/2024	03/09/2024	03/09/2024	03/09/2024
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	%	83	90	97	96	91

PAHs in Soil					
Our Reference		360433-11	360433-12	360433-13	360433-14
Your Reference	UNITS	HA09	HA10	HA10	BD1/20240827
Depth		0.35-0.4	0.3-0.35	0.35-0.4	-
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	03/09/2024	03/09/2024	03/09/2024	03/09/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.2	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.6	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.5	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.3	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.2	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.4	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	2.6	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	91	91	94	92

Organochlorine Pesticides in soil						
Our Reference		360433-1	360433-4	360433-5	360433-9	360433-11
Your Reference	UNITS	HA01	HA03	HA04	HA08	HA09
Depth		0.35-0.4	0.45-0.55	0.35-0.4	0.4-0.45	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	03/09/2024	03/09/2024	03/09/2024	03/09/2024	03/09/2024
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	106	105	103	103	107
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1

Organophosphorus Pesticides in Soil						
Our Reference	UNITS	360433-1	360433-4	360433-5	360433-9	360433-11
Your Reference		HA01	HA03	HA04	HA08	HA09
Depth		0.35-0.4	0.45-0.55	0.35-0.4	0.4-0.45	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	03/09/2024	03/09/2024	03/09/2024	03/09/2024	03/09/2024
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	%	106	105	103	103	107

PCBs in Soil						
Our Reference		360433-1	360433-4	360433-5	360433-9	360433-11
Your Reference	UNITS	HA01	HA03	HA04	HA08	HA09
Depth		0.35-0.4	0.45-0.55	0.35-0.4	0.4-0.45	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	03/09/2024	03/09/2024	03/09/2024	03/09/2024	03/09/2024
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	%	114	107	101	105	103

Misc Soil - Inorg

Our Reference		360433-1	360433-4	360433-5	360433-8	360433-9
Your Reference	UNITS	HA01	HA03	HA04	HA07	HA08
Depth		0.35-0.4	0.45-0.55	0.35-0.4	0.45-0.5	0.4-0.45
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg

Our Reference		360433-10	360433-11	360433-13
Your Reference	UNITS	HA09	HA09	HA10
Depth		0.3-0.35	0.35-0.4	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil
Date prepared	-	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	30/08/2024	30/08/2024	30/08/2024
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Acid Extractable metals in soil

Our Reference		360433-1	360433-2	360433-3	360433-4	360433-5
Your Reference	UNITS	HA01	HA02	HA03	HA03	HA04
Depth		0.35-0.4	0.35-0.45	0.3-0.4	0.45-0.55	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	02/09/2024	02/09/2024	02/09/2024	02/09/2024	02/09/2024
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.6
Chromium	mg/kg	6	4	5	3	7
Copper	mg/kg	150	35	34	7	35
Lead	mg/kg	6	4	2	4	<2
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	20	16	21	5	43
Zinc	mg/kg	23	18	14	6	18

Acid Extractable metals in soil

Our Reference		360433-6	360433-7	360433-8	360433-9	360433-10
Your Reference	UNITS	HA05	HA06	HA07	HA08	HA09
Depth		0.35-0.45	0.35-0.45	0.45-0.5	0.4-0.45	0.3-0.35
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	02/09/2024	02/09/2024	02/09/2024	02/09/2024	02/09/2024
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.5	<0.4
Chromium	mg/kg	5	12	7	10	11
Copper	mg/kg	43	53	70	150	74
Lead	mg/kg	4	4	11	22	12
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	23	53	18	35	18
Zinc	mg/kg	13	17	29	120	28

Acid Extractable metals in soil						
Our Reference		360433-11	360433-12	360433-13	360433-14	360433-17
Your Reference	UNITS	HA09	HA10	HA10	BD1/20240827	HA01 - [TRIPLICATE]
Depth		0.35-0.4	0.3-0.35	0.35-0.4	-	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	02/09/2024	02/09/2024	02/09/2024	02/09/2024	02/09/2024
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	<1	5	4	7
Copper	mg/kg	28	41	62	9	120
Lead	mg/kg	16	2	20	4	5
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	3	6	4	18
Zinc	mg/kg	28	12	17	8	17

Client Reference: 86964.04 North Sydney

Moisture						
Our Reference	UNITS	360433-1	360433-2	360433-3	360433-4	360433-5
Your Reference		HA01	HA02	HA03	HA03	HA04
Depth		0.35-0.4	0.35-0.45	0.3-0.4	0.45-0.55	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	02/09/2024	02/09/2024	02/09/2024	02/09/2024	02/09/2024
Moisture	%	5.7	1.8	1.3	9.2	0.9

Moisture						
Our Reference	UNITS	360433-6	360433-7	360433-8	360433-9	360433-10
Your Reference		HA05	HA06	HA07	HA08	HA09
Depth		0.35-0.45	0.35-0.45	0.45-0.5	0.4-0.45	0.3-0.35
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	02/09/2024	02/09/2024	02/09/2024	02/09/2024	02/09/2024
Moisture	%	2.9	4.1	7.7	26	9.7

Moisture					
Our Reference	UNITS	360433-11	360433-12	360433-13	360433-14
Your Reference		HA09	HA10	HA10	BD1/20240827
Depth		0.35-0.4	0.3-0.35	0.35-0.4	-
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	30/08/2024	30/08/2024	30/08/2024	30/08/2024
Date analysed	-	02/09/2024	02/09/2024	02/09/2024	02/09/2024
Moisture	%	7.4	2.6	5.2	7.8

Asbestos ID - soils						
Our Reference	UNITS	360433-1	360433-2	360433-3	360433-4	360433-5
Your Reference		HA01	HA02	HA03	HA03	HA04
Depth		0.35-0.4	0.35-0.45	0.3-0.4	0.45-0.55	0.35-0.4
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	04/09/2024	04/09/2024	04/09/2024	04/09/2024	04/09/2024
Sample mass tested	g	Approx. 30g	Approx. 40g	Approx. 35g	Approx. 30g	Approx. 35g
Sample Description	-	Grey rocks	Grey rocks	Grey rocks	Grey coarse-grained soil & rocks	Grey 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	UNITS	360433-6	360433-7	360433-8	360433-10	360433-12
Your Reference		HA05	HA06	HA07	HA09	HA10
Depth		0.35-0.45	0.35-0.45	0.45-0.5	0.3-0.35	0.3-0.35
Date Sampled		27/08/2024	27/08/2024	27/08/2024	27/08/2024	27/08/2024
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	04/09/2024	04/09/2024	04/09/2024	04/09/2024	04/09/2024
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 110g	Approx. 100g	Approx. 40g
Sample Description	-	Grey rocks	Grey rocks	Grey coarse-grained soil & rocks	Grey coarse-grained soil & rocks	Grey 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		360433-13
Your Reference	UNITS	HA10
Depth		0.35-0.4
Date Sampled		27/08/2024
Type of sample		Soil
Date analysed	-	04/09/2024
Sample mass tested	g	Approx. 40g
Sample Description	-	Grey coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	Nil
Trace Analysis	-	No asbestos detected

Asbestos ID - soils NEPM			
Our Reference		360433-9	360433-11
Your Reference	UNITS	HA08	HA09
Depth		0.4-0.45	0.35-0.4
Date Sampled		27/08/2024	27/08/2024
Type of sample		Soil	Soil
Date analysed	-	04/09/2024	04/09/2024
Sample mass tested	g	597.37	557.64
Sample Description	-	Beige coarse-grained soil & rocks	Beige sandy soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected
Total Asbestos ^{#1}	g/kg	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	—	—
FA and AF Estimation*	g	—	—
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001
Asbestos comments	-	Nil	Nil

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

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022/025	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. 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)-BTX 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)-BTX 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.

Client Reference: 86964.04 North Sydney

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	360433-4
Date extracted	-			02/09/2024	1	30/08/2024	30/08/2024		30/08/2024	30/08/2024
Date analysed	-			03/09/2024	1	02/09/2024	02/09/2024		02/09/2024	02/09/2024
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	1	<25	<25	0	94	92
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	1	<25	<25	0	94	92
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	90	87
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	89	86
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	86	85
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	102	102
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	96	95
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	101	1	78	79	1	90	90

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]	11	30/08/2024	30/08/2024		[NT]	[NT]
Date analysed	-			[NT]	11	02/09/2024	02/09/2024		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	11	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	11	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	11	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	11	96	95	1	[NT]	[NT]

Client Reference: 86964.04 North Sydney

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	360433-4
Date extracted	-			30/08/2024	1	30/08/2024	30/08/2024		30/08/2024	30/08/2024
Date analysed	-			31/08/2024	1	31/08/2024	31/08/2024		31/08/2024	31/08/2024
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	1	52	<50	4	94	101
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	1	810	320	87	104	115
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	1	720	320	77	100	124
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	1	98	50	65	94	101
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	1	1300	520	86	104	115
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	1	580	320	58	100	124
Surrogate o-Terphenyl	%		Org-020	95	1	#	#		112	97

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2024	30/08/2024		[NT]	[NT]
Date analysed	-			[NT]	11	31/08/2024	31/08/2024		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	11	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	11	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	11	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	11	97	96	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	360433-4
Date extracted	-			30/08/2024	1	30/08/2024	30/08/2024		30/08/2024	30/08/2024
Date analysed	-			03/09/2024	1	03/09/2024	03/09/2024		03/09/2024	03/09/2024
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	<0.1	0	75	80
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	77	82
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	72	78
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	<0.1	0	76	82
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	0.2	<0.1	67	76	84
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	<0.1	0	84	90
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	61	66
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	80	82
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	103	1	101	99	2	103	97

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2024	30/08/2024		[NT]	[NT]
Date analysed	-			[NT]	11	03/09/2024	03/09/2024		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	11	0.2	<0.1	67	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	11	0.6	<0.1	143	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	11	0.5	<0.1	133	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	11	0.3	<0.1	100	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	11	0.2	<0.1	67	[NT]	[NT]
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	11	0.4	<0.2	67	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	11	0.2	<0.05	120	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	11	0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	11	0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	11	91	90	1	[NT]	[NT]

Client Reference: 86964.04 North Sydney

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	360433-4
Date extracted	-			30/08/2024	1	30/08/2024	30/08/2024		30/08/2024	30/08/2024
Date analysed	-			03/09/2024	1	03/09/2024	03/09/2024		03/09/2024	03/09/2024
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	73	79
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	72	82
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	77	87
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	73	82
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	96
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	72	83
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	80	95
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	74	79
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	79	90
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	79	89
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	101	1	106	110	4	100	108

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2024	30/08/2024		[NT]	[NT]
Date analysed	-			[NT]	11	03/09/2024	03/09/2024		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	11	107	100	7	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	360433-4
Date extracted	-			30/08/2024	1	30/08/2024	30/08/2024		30/08/2024	30/08/2024
Date analysed	-			03/09/2024	1	03/09/2024	03/09/2024		03/09/2024	03/09/2024
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	96
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	63	74
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	72	87
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	85	91
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	67	76
Fenthion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	74	83
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	104
Phosalone	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	101	1	106	110	4	100	108

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2024	30/08/2024		[NT]	[NT]
Date analysed	-			[NT]	11	03/09/2024	03/09/2024		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fenthion	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Phosalone	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	[NT]	11	107	100	7	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	360433-4
Date extracted	-			30/08/2024	1	30/08/2024	30/08/2024		30/08/2024	30/08/2024
Date analysed	-			03/09/2024	1	03/09/2024	03/09/2024		03/09/2024	03/09/2024
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	78	60
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	97	1	114	112	2	97	108

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	11	30/08/2024	30/08/2024		[NT]	[NT]
Date analysed	-			[NT]	11	03/09/2024	03/09/2024		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	[NT]	11	103	100	3	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	360433-4
Date prepared	-			30/08/2024	1	30/08/2024	30/08/2024		30/08/2024	30/08/2024
Date analysed	-			30/08/2024	1	30/08/2024	30/08/2024		30/08/2024	30/08/2024
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	94	87

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	360433-4
Date prepared	-			30/08/2024	1	30/08/2024	30/08/2024		30/08/2024	30/08/2024
Date analysed	-			02/09/2024	1	02/09/2024	02/09/2024		02/09/2024	02/09/2024
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	100	98
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	103	92
Chromium	mg/kg	1	Metals-020	<1	1	6	7	15	100	97
Copper	mg/kg	1	Metals-020	<1	1	150	100	40	101	107
Lead	mg/kg	1	Metals-020	<1	1	6	6	0	104	97
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	104	97
Nickel	mg/kg	1	Metals-020	<1	1	20	17	16	99	92
Zinc	mg/kg	1	Metals-020	<1	1	23	17	30	103	95

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	30/08/2024	30/08/2024		[NT]	[NT]
Date analysed	-			[NT]	11	02/09/2024	02/09/2024		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	11	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	11	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	11	5	5	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	11	28	20	33	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	11	16	18	12	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	11	9	9	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	11	28	27	4	[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.
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

TRH Soil C10-C40 NEPM - # Percent recovery for the surrogate is not possible to report as the high concentration of analytes in sample 360433-1,1d have caused interference.

TRH Soil C10-C40 NEPM - The RPD for duplicate results is accepted due to the non homogenous nature of samples 360433-1,1d.

Acid Extractable Metals in Soil:

- The laboratory RPD acceptance criteria has been exceeded for 360433-1 for Cu. Therefore a triplicate result has been issued as laboratory sample number 360433-17.

-The PQL has been raised for Cd and Pb due to the nature of sample/s 360433-5.which required digestion with a higher than routine dilution factor.

Asbestos-ID in soil: NEPM

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

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 360433-1-7, 12, 13 were sub-sampled from jars provided by the client.

Note: Samples 360433-8 & 10 were sub-sampled from bags provided by the client.

PAHs in Soil - The RPD for duplicate results is accepted due to the non homogenous nature of sample/s 360433-11,11d.

Project No: 86964.04		Suburb: North Sydney		To: Envirolab Services	
Project Manager: Huy Tran		Order Number:		Sampler: IR/JC	
Email: huy.tran@douglaspartners.com.au, irha.riaz@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, then handle, transport and store in accordance with FPM HAZID)			

Lab ID	Sample ID			Date Sampled	Sample Type S - soil W - water M - Material	Container Type G - glass P - plastic	Analytes										Notes/ Preservation/ Additional Requirements
	Location / Other ID	Depth From	Depth To				combo 8a	combo 4a	combo 3a	combo 3	BTEXN						
1	HA01	0.35	0.4	27.8.24	s	G	x										
2	HA02	0.35	0.45	27.8.24	s	G				x							
3	HA03	0.3	0.4	27.8.24	s	G				x							
4	HA03	0.45	0.55	27.8.24	s	G	x										
5	HA04	0.35	0.4	27.8.24	s	G	x										
6	HA05	0.35	0.45	27.8.24	s	G				x							
7	HA06	0.35	0.45	27.8.24	s	G				x							
8	HA07	0.45	0.5	27.8.24	s	G			x								
9	HA08	0.4	0.45	27.8.24	s	G	x										
10	HA09	0.3	0.35	27.8.24	s	G			x								
11	HA09	0.35	0.4	27.8.24	s	G	x										
12	HA10	0.3	0.35	27.8.24	s	G				x							
13	HA10	0.35	0.4	27.8.24	s	G			x								
14	BD1/20240827			27.8.24	s	G					x						

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

Job No: 360433

29/8/24

Date Received: 29/8/24
Time Received: 12:20
Received By: ON
Temp: Cool/Ambient
Cooling: Ice/Insulation
Security: Intact/Broken/None

Metals to analyse:		LAB RECEIPT	
Number of samples in container:		Transported to laboratory by:	
Send results to: Douglas Partners Pty Ltd		Lab Ref. No:	
Address: 96 Hermitage Road, West Ryde NSW 2112		Received by:	
Relinquished by: IR		Date & Time:	
Phone: (02) 9809 0666		Signed:	
Date: 29/08/2024		Signed:	

Rev 0/April 2024

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Huy Tran

Sample Login Details

Your reference	86964.04 North Sydney
Envirolab Reference	360433
Date Sample Received	29/08/2024
Date Instructions Received	29/08/2024
Date Results Expected to be Reported	05/09/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	16 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: ahie@envirolab.com.au

Jacinta Hurst

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:

Sample ID	VTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Misc Soil - Inorg	Acid Extractable metals in soil	Asbestos ID - soils	Asbestos ID - soils NEPM
HA01-0.35-0.4	✓	✓	✓	✓	✓	✓	✓	✓	✓	
HA02-0.35-0.45	✓	✓	✓					✓	✓	
HA03-0.3-0.4	✓	✓	✓					✓	✓	
HA03-0.45-0.55	✓	✓	✓	✓	✓	✓	✓	✓	✓	
HA04-0.35-0.4	✓	✓	✓	✓	✓	✓	✓	✓	✓	
HA05-0.35-0.45	✓	✓	✓					✓	✓	
HA06-0.35-0.45	✓	✓	✓					✓	✓	
HA07-0.45-0.5	✓	✓	✓				✓	✓	✓	
HA08-0.4-0.45	✓	✓	✓	✓	✓	✓	✓	✓		✓
HA09-0.3-0.35	✓	✓	✓				✓	✓	✓	
HA09-0.35-0.4	✓	✓	✓	✓	✓	✓	✓	✓		✓
HA10-0.3-0.35	✓	✓	✓					✓	✓	
HA10-0.35-0.4	✓	✓	✓				✓	✓	✓	
BD1/20240827	✓	✓	✓					✓		
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.

CERTIFICATE OF ANALYSIS 360433-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Irha Riaz
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>86964.04 North Sydney</u>
Number of Samples	Additional analysis 2 samples
Date samples received	29/08/2024
Date completed instructions received	14/10/2024

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	17/10/2024
Date of Issue	16/10/2024
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Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Loren Bardwell, Development Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Metals from Leaching Fluid pH 2.9 or 5			
Our Reference		360433-A-5	360433-A-7
Your Reference	UNITS	HA04	HA06
Depth		0.35-0.4	0.35-0.45
Date Sampled		27/08/2024	27/08/2024
Type of sample		Soil	Soil
Date extracted	-	15/10/2024	15/10/2024
Date analysed	-	15/10/2024	15/10/2024
pH of soil for fluid# determ.	pH units	8.4	9.4
pH of soil TCLP (after HCl)	pH units	1.6	1.5
Extraction fluid used		1	1
pH of final Leachate	pH units	5.1	5.6
Nickel	mg/L	0.02	<0.02

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.

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	[NT]
Date extracted	-			15/10/2024	[NT]	[NT]	[NT]	[NT]	15/10/2024	[NT]
Date analysed	-			15/10/2024	[NT]	[NT]	[NT]	[NT]	15/10/2024	[NT]
Nickel	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

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

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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.
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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.
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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.

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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.

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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.

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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.

Anna Bui

From: Irha Riaz <Irha.Riaz@douglaspartners.com.au>
Sent: Monday, 14 October 2024 1:49 PM
To: Nancy Zhang; Envirolab Sydney Sample Receipt
Cc: Huy Tran
Subject: TCLP Analysis 86964.04
Attachments: 362420-SRA.pdf; 360433-SRA.pdf

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

Hi Nancy,

Can I please confirm if you still have the soil samples for project in the header. I have attached SRAs for reference.

If you can confirm, I would like to request TCLP analysis for nickel for the following samples on a 3 day TAT:

5 - HA04/0.35-0.4
7 - HA06 0.35-0.45
- BH102 / 0.35-0.4

Please let me know if you have any questions.

Kind regards

Irha Riaz | Environmental Scientist

☎ 02 9809 0666 ☎ +61 477952237 ➡ Irha.Riaz@douglaspartners.com.au

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



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ELS REF: 360433-A

TAT: 3 DAY

DUE: 17/10/24

AR

CERTIFICATE OF ANALYSIS 360451

Client Details

Client	Douglas Partners Pty Ltd
Attention	Huy Tran
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>86964.04 105 Miller Road, North Sydney</u>
Number of Samples	air
Date samples received	29/08/2024
Date completed instructions received	29/08/2024

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	05/09/2024
Date of Issue	05/09/2024
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Results Approved By

Amanda Chui, LC/Air Toxics Supervisor
Timothy Toll, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

TO15 Chlorinated in Cans ppbv					
Our Reference		360451-1	360451-3	360451-5	360451-7
Your Reference	UNITS	SV1	SV2	SV3	BD1
Date Sampled		28/08/2024	28/08/2024	28/08/2024	28/08/2024
Type of sample		Air	Air	Air	Air
Air Kit Security No.		2267	2467	3282	3276
Vacuum before Shipment	Hg"	-30	-30	-30	-30
Vacuum before Analysis	Hg"	-7	-7	-6	-6
Date prepared	-	29/08/2024	29/08/2024	29/08/2024	29/08/2024
Date analysed	-	29/08/2024	29/08/2024	29/08/2024	29/08/2024
Vinyl chloride	ppbv	<0.3	<0.3	<0.3	<0.3
Trichloroethene	ppbv	<0.3	<0.3	<0.3	<0.3
1,1-Dichloroethene	ppbv	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	ppbv	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	ppbv	<0.5	<0.5	<0.5	<0.5
1,1,1-Trichloroethane	ppbv	<0.5	<0.5	<0.5	<0.5
Tetrachloroethene	ppbv	<0.5	<0.5	<0.5	<0.5
Isopropyl Alcohol	ppbv	61	190	410	20
Surrogate-Bromochloromethane	% rec	105	102	105	105
Surrogate -1,4-Difluorobenzene	% rec	104	98	104	105
Surrogate-Chlorobenzene-D5	% rec	105	103	107	108

TO15 chlorinated VOCs in Cans µg/m3					
Our Reference		360451-1	360451-3	360451-5	360451-7
Your Reference	UNITS	SV1	SV2	SV3	BD1
Date Sampled		28/08/2024	28/08/2024	28/08/2024	28/08/2024
Type of sample		Air	Air	Air	Air
Air Kit Security No.		2267	2467	3282	3276
Vacuum before Shipment	Hg"	-30	-30	-30	-30
Vacuum before Analysis	Hg"	-7	-7	-6	-6
Date prepared	-	29/08/2024	29/08/2024	29/08/2024	29/08/2024
Date analysed	-	29/08/2024	29/08/2024	29/08/2024	29/08/2024
Vinyl chloride	µg/m ³	<0.8	<0.8	<0.8	<0.8
Trichloroethene	µg/m ³	<1.6	<1.6	<1.6	<1.6
1,1-Dichloroethene	µg/m ³	<2	<2	<2	<2
trans-1,2-dichloroethene	µg/m ³	<2	<2	<2	<2
cis-1,2-Dichloroethene	µg/m ³	<2	<2	<2	<2
1,1,1-Trichloroethane	µg/m ³	<2.7	<2.7	<2.7	<2.7
Tetrachloroethene	µg/m ³	<3.4	<3.4	<3.4	<3.4
Isopropyl Alcohol	µg/m ³	150	470	1,000	40
Surrogate-Bromochloromethane	% rec	105	102	105	105
Surrogate -1,4-Difluorobenzene	% rec	104	98	104	105
Surrogate-Chlorobenzene-D5	% rec	105	103	107	108

IPA in Carbon Tubes & Badges			
Our Reference		360451-9	360451-10
Your Reference	UNITS	SHROUD -Front Component	SHROUD -Back Component
Date Sampled		28/08/2024	28/08/2024
Type of sample		Air	Air
Air Kit Security No.		2626007867	2626007867
Date Extracted	-	30/08/2024	30/08/2024
Date Analysed	-	30/08/2024	30/08/2024
Tube Sampling rate	mL/min	100	100
Sampling Time	mins	5	5
Volume sampled	m ³	0.00050	0.00050
Isopropyl Alcohol*	µg	40	200
Isopropyl Alcohol*	µg/m ³	77,000	390,000
Surrogate Toluene-d8	%	87	88
Surrogate 4-Bromofluorobenzene	%	81	78

Method ID	Methodology Summary
ORG-022	Determination of volatile organic compounds in charcoal tubes/badges/sorbents using CS₂ extraction, determined by GC/GC-MS. Desorption efficiencies are not applied to results. Note where µg/m³ or mg/m³ results are supplied for SKC badges, the factors used are for 575-002, if 575-002 data is unavailable for an analyte then use 575-001 then 575-003 (exposure time must be supplied). Otherwise a sampling rate may be used for a similar analyte on request. Analytes such as (where applicable) Iodomethane, Chloroprene, Nitrobenzene, Naphthalene and 1, 2, 3 / 1, 2, 4 Trichlorobenzenes are considered to be semi-quant analyses using CS₂ desorption from charcoal tubes. The latter three compounds are better served by XAD-2 collection and analysis. Note - air volume measurements are not covered by Envirolab's NATA accreditation.
TO15	USEPA TO15 - Analysis of VOC's in air using USEPA TO15 and in house method AT-002. Note, longer term stability of some oxygenated compounds is questionable where significant humidity is present.

QUALITY CONTROL: TO15 Chlorinated in Cans ppbv					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Vacuum before Shipment	Hg"			[NT]	1	-30	-30	0	[NT]	[NT]
Vacuum before Analysis	Hg"			[NT]	1	-7	-7	0	[NT]	[NT]
Date prepared	-			29/08/2024	1	29/08/2024	29/08/2024		29/08/2024	[NT]
Date analysed	-			29/08/2024	1	29/08/2024	29/08/2024		29/08/2024	[NT]
Vinyl chloride	ppbv	0.3	TO15	<0.3	1	<0.3	<0.3	0	112	[NT]
Trichloroethene	ppbv	0.3	TO15	<0.3	1	<0.3	<0.3	0	100	[NT]
1,1-Dichloroethene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
trans-1,2-dichloroethene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
cis-1,2-Dichloroethene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
1,1,1-Trichloroethane	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	[NT]	[NT]
Tetrachloroethene	ppbv	0.5	TO15	<0.5	1	<0.5	<0.5	0	94	[NT]
Isopropyl Alcohol	ppbv	5	TO15	<5	1	61	61	0	[NT]	[NT]
Surrogate-Bromochloromethane	% rec		TO15	95	1	105	104	1	113	[NT]
Surrogate -1,4-Difluorobenzene	% rec		TO15	91	1	104	101	3	121	[NT]
Surrogate-Chlorobenzene-D5	% rec		TO15	83	1	105	102	3	109	[NT]

QUALITY CONTROL: TO15 chlorinated VOCs in Cans µg/m3						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Vacuum before Shipment	Hg"			[NT]	1	-30	-30	0	[NT]	[NT]
Vacuum before Analysis	Hg"			[NT]	1	-7	-7	0	[NT]	[NT]
Date prepared	-			29/08/2024	1	29/08/2024	29/08/2024		[NT]	[NT]
Date analysed	-			29/08/2024	1	29/08/2024	29/08/2024		[NT]	[NT]
Vinyl chloride	µg/m³	0.8	TO15	<0.8	1	<0.8	<0.8	0	[NT]	[NT]
Trichloroethene	µg/m³	1.6	TO15	<1.6	1	<1.6	<1.6	0	[NT]	[NT]
1,1-Dichloroethene	µg/m³	2.0	TO15	<2.0	1	<2	<2.0	0	[NT]	[NT]
trans-1,2-dichloroethene	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
cis-1,2-Dichloroethene	µg/m³	2.0	TO15	<2.0	1	<2	<2	0	[NT]	[NT]
1,1,1-Trichloroethane	µg/m³	2.7	TO15	<2.7	1	<2.7	<2.7	0	[NT]	[NT]
Tetrachloroethene	µg/m³	3.4	TO15	<3.4	1	<3.4	<3.4	0	[NT]	[NT]
Isopropyl Alcohol	µg/m³	12	TO15	<12	1	150	150	0	[NT]	[NT]
Surrogate-Bromochloromethane	% rec		TO15	95	1	105	104	1	[NT]	[NT]
Surrogate -1,4-Difluorobenzene	% rec		TO15	91	1	104	101	3	[NT]	[NT]
Surrogate-Chlorobenzene-D5	% rec		TO15	83	1	105	102	3	[NT]	[NT]

QUALITY CONTROL: IPA in Carbon Tubes & Badges					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date Extracted	-			30/08/2024	[NT]	[NT]	[NT]	[NT]	30/08/2024	[NT]
Date Analysed	-			30/08/2024	[NT]	[NT]	[NT]	[NT]	30/08/2024	[NT]
Isopropyl Alcohol*	µg	5	ORG-022	<5	[NT]	[NT]	[NT]	[NT]	76	[NT]
Surrogate Toluene-d8	%		ORG-022	75	[NT]	[NT]	[NT]	[NT]	84	[NT]
Surrogate 4-Bromofluorobenzene	%		ORG-022	79	[NT]	[NT]	[NT]	[NT]	87	[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

IPA in Carbon Tubes & Badges - For sample SHROUD, the back component returned values >LOR while the front component returned values <LOR.

It has been assumed that the tube has been incorrectly installed during sampling.

Front and back components for sample SHROUD have been reported as 360451-9 and 360451-10 respectively.

IPA in Carbon Tubes & Badges - Results showed breakthrough and possible sample loss. This is determined by checking if the back sorbent concentration is > 25% of the front sorbent concentration.

Project No: 86964.04		Suburb: North Sydney		To: EnviroLab Services	
Project Name: 105 Miller Road, North Sydney		Order Number		12 Ashley Street, Chatswood	
Project Manager: Huy Tran		Sampler: Huy Tran		Attn: Aileen	
Emails: huy.tran@douglaspartners.com.au, lthia.Riaz@douglaspa		Phone: 612 9910 6200		Email: aileen@envirolab.com.au	
Date Required: Standard		Do samples contain potential HBM? Yes ☐ No ☐ (if YES, then handle, transport and store in accordance with FPM HAZID)			
Prior Storage: ☐ Esky ☐ Fridge ☐ Shelved					

Sample ID	Lab ID	Date Sampled	Sample Type C- carbon tube S- suma can	Serial No.s	Restrictor	Analyses			Sample Details				Weather Conditions Temperature and Humidity		
						Chlorinated Hydrocarbons and IPA	IPA	Hold	Start vacuum	stop vacuum	Sample duration (mins)	Flow Rate (ml/min)		Volume (mL)	PID (ppm)
SV1	1	28/08/24	S	2267	1874				-28	-7	10			5	indoors
	2	28/08/24	C	2626007864	-						5	100	500	5	indoors
SV2	3	28/08/24	S	2467	2341				-29	-7	10			1	indoors
	4	28/08/24	C	2626007862	-						5	100	500	1	indoors
SV3	5	28/08/24	S	3282	2084				24	-7	18			5	indoors
	6	28/08/24	C	2626007871	-						5	100	500	5	indoors
BD1	7	28/08/24	S	3276	2084				-24	-7	18			5	indoors
	8	28/08/24	C	2626007870	-						5	100	500	5	indoors
Shroud	9	28/08/24	C	2626007867											

PQL (S) mg/kg
 PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit
 Metals to Analyse: 8HM unless specified here:
 Total number of samples in container:
 Send Results to: Douglas Partners Pty Ltd Address: Relinquished by: IR Transported to laboratory by: Lab Report/Reference No: 3 Security: intact/broken/None
 Signed: Date & Time: 29/08/24 10:00 Received by: 29/08/24 10:00

Job No: 360451
 Date Received: 29/08/24
 Time Received: 10:00
 Received By: Sinc
 Temp (Cool/Ambient)
 Cooling: Ice/icepack
 EnviroLab Services
 12 Ashley St
 Chatswood NSW 2067
 Ph: (02) 9910 6200

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Huy Tran

Sample Login Details

Your reference	86964.04 105 Miller Road, North Sydney
Envirolab Reference	360451
Date Sample Received	29/08/2024
Date Instructions Received	29/08/2024
Date Results Expected to be Reported	05/09/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	air
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	n/a
Cooling Method	Not applicable
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	TO15 Chlorinated in Cans ppbv	TO15 chlorinated VOCs in Cans µg/m3	IPA in Carbon Tubes & Badges	On Hold
SV1	✓	✓		
SV1				✓
SV2	✓	✓		
SV2				✓
SV3	✓	✓		
SV3				✓
BD1	✓	✓		
BD1				✓
SHROUD			✓	

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.

CERTIFICATE OF ANALYSIS 362420

Client Details

Client	Douglas Partners Pty Ltd
Attention	Huy Tran
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>86964.04, North Sydney</u>
Number of Samples	4 Soil
Date samples received	23/09/2024
Date completed instructions received	23/09/2024

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	30/09/2024
Date of Issue	30/09/2024
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Asbestos Approved By

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

Authorised By

Nancy Zhang, Laboratory Manager

Results Approved By

Diego Bigolin, Inorganics Supervisor
 Dragana Tomas, Senior Chemist
 Jack Wallis, Senior Chemist
 Loren Bardwell, Development Chemist
 Lucy Zhu, Asbestos Supervisor
 Timothy Toll, Senior Chemist

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		362420-1	362420-2	362420-3	362420-4
Your Reference	UNITS	BH101	BH102	BH102	BH102
Depth		0.39-0.43	0.35-0.4	0.45-0.5	0.5-0.54
Date Sampled		18/09/2024	23/09/2024	23/09/2024	23/09/2024
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	24/09/2024	24/09/2024	24/09/2024	24/09/2024
Date analysed	-	27/09/2024	27/09/2024	27/09/2024	27/09/2024
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25
vTRH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	84	85	83	82

svTRH (C10-C40) in Soil					
Our Reference		362420-1	362420-2	362420-3	362420-4
Your Reference	UNITS	BH101	BH102	BH102	BH102
Depth		0.39-0.43	0.35-0.4	0.45-0.5	0.5-0.54
Date Sampled		18/09/2024	23/09/2024	23/09/2024	23/09/2024
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	24/09/2024	24/09/2024	24/09/2024	24/09/2024
Date analysed	-	26/09/2024	26/09/2024	26/09/2024	26/09/2024
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	130	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	170	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	300	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	250	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	160	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	410	<50
Surrogate o-Terphenyl	%	90	93	94	91

PAHs in Soil					
Our Reference		362420-1	362420-2	362420-3	362420-4
Your Reference	UNITS	BH101	BH102	BH102	BH102
Depth		0.39-0.43	0.35-0.4	0.45-0.5	0.5-0.54
Date Sampled		18/09/2024	23/09/2024	23/09/2024	23/09/2024
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	24/09/2024	24/09/2024	24/09/2024	24/09/2024
Date analysed	-	30/09/2024	30/09/2024	30/09/2024	24/09/2024
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.06	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.2	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	81	84	85	89

Organochlorine Pesticides in soil		
Our Reference		362420-4
Your Reference	UNITS	BH102
Depth		0.5-0.54
Date Sampled		23/09/2024
Type of sample		Soil
Date extracted	-	24/09/2024
Date analysed	-	24/09/2024
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	%	90

Organophosphorus Pesticides in Soil		
Our Reference		362420-4
Your Reference	UNITS	BH102
Depth		0.5-0.54
Date Sampled		23/09/2024
Type of sample		Soil
Date extracted	-	24/09/2024
Date analysed	-	24/09/2024
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	%	90

PCBs in Soil		
Our Reference		362420-4
Your Reference	UNITS	BH102
Depth		0.5-0.54
Date Sampled		23/09/2024
Type of sample		Soil
Date extracted	-	24/09/2024
Date analysed	-	24/09/2024
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	%	78

Misc Soil - Inorg			
Our Reference		362420-3	362420-4
Your Reference	UNITS	BH102	BH102
Depth		0.45-0.5	0.5-0.54
Date Sampled		23/09/2024	23/09/2024
Type of sample		Soil	Soil
Date prepared	-	24/09/2024	24/09/2024
Date analysed	-	24/09/2024	24/09/2024
Total Phenolics (as Phenol)	mg/kg	<5	<5

Acid Extractable metals in soil					
Our Reference		362420-1	362420-2	362420-3	362420-4
Your Reference	UNITS	BH101	BH102	BH102	BH102
Depth		0.39-0.43	0.35-0.4	0.45-0.5	0.5-0.54
Date Sampled		18/09/2024	23/09/2024	23/09/2024	23/09/2024
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	24/09/2024	24/09/2024	24/09/2024	24/09/2024
Date analysed	-	24/09/2024	24/09/2024	24/09/2024	24/09/2024
Arsenic	mg/kg	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	3	9	10	5
Copper	mg/kg	3	16	55	33
Lead	mg/kg	5	<1	7	7
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	44	26	12
Zinc	mg/kg	8	16	26	18

Moisture					
Our Reference		362420-1	362420-2	362420-3	362420-4
Your Reference	UNITS	BH101	BH102	BH102	BH102
Depth		0.39-0.43	0.35-0.4	0.45-0.5	0.5-0.54
Date Sampled		18/09/2024	23/09/2024	23/09/2024	23/09/2024
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	24/09/2024	24/09/2024	24/09/2024	24/09/2024
Date analysed	-	25/09/2024	25/09/2024	25/09/2024	25/09/2024
Moisture	%	6.7	1.5	7.4	9.3

Asbestos ID - soils					
Our Reference	UNITS	362420-1	362420-2	362420-3	362420-4
Your Reference		BH101	BH102	BH102	BH102
Depth		0.39-0.43	0.35-0.4	0.45-0.5	0.5-0.54
Date Sampled		18/09/2024	23/09/2024	23/09/2024	23/09/2024
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	30/09/2024	30/09/2024	30/09/2024	30/09/2024
Sample mass tested	g	Approx. 30g	Approx. 30g	Approx. 35g	Approx. 30g
Sample Description	-	Brown fine-grained soil & rocks	Black 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
Asbestos comments	-	Nil	Nil	Nil	Nil
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

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-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.
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.
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.

Method ID	Methodology Summary
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)-BTX 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)-BTX 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.

Client Reference: 86964.04, North Sydney

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	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Date analysed	-			27/09/2024	4	27/09/2024	27/09/2024		27/09/2024	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	4	<25	<25	0	99	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	4	<25	<25	0	99	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	4	<0.2	<0.2	0	94	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	4	<0.5	<0.5	0	97	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	4	<1	<1	0	99	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	4	<2	<2	0	103	[NT]
o-Xylene	mg/kg	1	Org-023	<1	4	<1	<1	0	106	[NT]
Naphthalene	mg/kg	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	89	4	82	87	6	87	[NT]

Client Reference: 86964.04, North Sydney

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Date analysed	-			26/09/2024	4	26/09/2024	26/09/2024		26/09/2024	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	4	<50	<50	0	109	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	4	<100	<100	0	107	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	4	<100	<100	0	114	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	4	<50	<50	0	109	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	4	<100	<100	0	107	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	4	<100	<100	0	114	[NT]
Surrogate o-Terphenyl	%		Org-020	91	4	91	88	3	90	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Date analysed	-			30/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	76	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	70	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	80	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	78	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	84	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	82	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	100	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	4	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	4	<0.05	<0.05	0	78	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	83	4	89	86	3	84	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Date analysed	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	82	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	84	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	86	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	82	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	86	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	84	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	88	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	88	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	94	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	84	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	92	4	90	89	1	95	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Date analysed	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	88	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	74	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	102	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	92	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	74	[NT]
Fenthion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	92	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	92	[NT]
Phosalone	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	92	4	90	89	1	95	[NT]

Client Reference: 86964.04, North Sydney

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Date analysed	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	97	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	78	4	78	82	5	81	[NT]

QUALITY CONTROL: Misc Soil - Inorg					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Date analysed	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	4	<5	<5	0	103	[NT]

Client Reference: 86964.04, North Sydney

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Date analysed	-			24/09/2024	4	24/09/2024	24/09/2024		24/09/2024	[NT]
Arsenic	mg/kg	4	Metals-020	<4	4	<4	<4	0	99	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	4	<0.4	<0.4	0	87	[NT]
Chromium	mg/kg	1	Metals-020	<1	4	5	4	22	91	[NT]
Copper	mg/kg	1	Metals-020	<1	4	33	32	3	92	[NT]
Lead	mg/kg	1	Metals-020	<1	4	7	6	15	91	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	4	<0.1	<0.1	0	94	[NT]
Nickel	mg/kg	1	Metals-020	<1	4	12	8	40	91	[NT]
Zinc	mg/kg	1	Metals-020	<1	4	18	18	0	91	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Report Comments

Asbestos: 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 362420-1-4 were sub-sampled from jars provided by the client.

CERTIFICATE OF ANALYSIS 362420-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Irha Riaz
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>86964.04, North Sydney</u>
Number of Samples	Additional analysis 1 sample
Date samples received	23/09/2024
Date completed instructions received	14/10/2024

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	17/10/2024
Date of Issue	16/10/2024
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Loren Bardwell, Development Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Metals from Leaching Fluid pH 2.9 or 5		
Our Reference		362420-A-2
Your Reference	UNITS	BH102
Depth		0.35-0.4
Date Sampled		23/09/2024
Type of sample		Soil
Date extracted	-	15/10/2024
Date analysed	-	15/10/2024
pH of soil for fluid# determ.	pH units	9.5
pH of soil TCLP (after HCl)	pH units	1.5
Extraction fluid used		1
pH of final Leachate	pH units	5.3
Nickel	mg/L	0.02

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.

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	[NT]
Date extracted	-			15/10/2024	[NT]	[NT]	[NT]	[NT]	15/10/2024	[NT]
Date analysed	-			15/10/2024	[NT]	[NT]	[NT]	[NT]	15/10/2024	[NT]
Nickel	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	102	[NT]

Result Definitions

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

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

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

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Spikes for Physical and Aggregate Tests are not applicable.

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

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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.

CHAIN OF CUSTODY DESPATCH SHEET

[illegible]

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Huy Tran

Sample Login Details

Your reference	86964.04, North Sydney
Envirolab Reference	362420
Date Sample Received	23/09/2024
Date Instructions Received	23/09/2024
Date Results Expected to be Reported	30/09/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	4 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: ahie@envirolab.com.au

Jacinta Hurst

Phone: 02 9910 6200
Fax: 02 9910 6201
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	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 metals in soil	Asbestos ID - soils
BH101-0.39-0.43	✓	✓	✓					✓	✓
BH102-0.35-0.4	✓	✓	✓					✓	✓
BH102-0.45-0.5	✓	✓	✓				✓	✓	✓
BH102-0.5-0.54	✓	✓	✓	✓	✓	✓	✓	✓	✓

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.

CERTIFICATE OF ANALYSIS 362930

Client Details

Client	Douglas Partners Pty Ltd
Attention	Irha Riaz
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	<u>86964.04 North Sydney</u>
Number of Samples	4 Water
Date samples received	30/09/2024
Date completed instructions received	30/09/2024

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	08/10/2024
Date of Issue	08/10/2024
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Dragana Tomas, Senior Chemist
 Jenny He, Senior Chemist
 Liam Timmins, Organics Supervisor
 Loren Bardwell, Development Chemist
 Timothy Toll, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

VOCs in water			
Our Reference		362930-1	362930-2
Your Reference	UNITS	MW01	BD1
Date Sampled		30/09/2024	30/09/2024
Type of sample		Water	Water
Date Extracted	-	03/10/2024	03/10/2024
Date Analysed	-	04/10/2024	04/10/2024
Dichlorodifluoromethane	µg/L	<10	<10
Chloromethane	µg/L	<10	<10
Vinyl Chloride	µg/L	<10	<10
Bromomethane	µg/L	<10	<10
Chloroethane	µg/L	<10	<10
Trichlorofluoromethane	µg/L	<10	<10
1,1-Dichloroethene	µg/L	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1
1,1-dichloroethane	µg/L	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1
Bromochloromethane	µg/L	<1	<1
Chloroform	µg/L	45	45
2,2-dichloropropane	µg/L	<1	<1
1,2-dichloroethane	µg/L	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1
1,1-dichloropropene	µg/L	<1	<1
Cyclohexane	µg/L	<1	<1
Carbon tetrachloride	µg/L	<1	<1
Benzene	µg/L	<1	<1
Dibromomethane	µg/L	<1	<1
1,2-dichloropropane	µg/L	<1	<1
Trichloroethene	µg/L	<1	<1
Bromodichloromethane	µg/L	6	6
trans-1,3-dichloropropene	µg/L	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1
Toluene	µg/L	<1	<1
1,3-dichloropropane	µg/L	<1	<1
Dibromochloromethane	µg/L	<1	1
1,2-dibromoethane	µg/L	<1	<1
Tetrachloroethene	µg/L	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1
Chlorobenzene	µg/L	<1	<1
Ethylbenzene	µg/L	<1	<1

VOCs in water			
Our Reference		362930-1	362930-2
Your Reference	UNITS	MW01	BD1
Date Sampled		30/09/2024	30/09/2024
Type of sample		Water	Water
Bromoform	µg/L	<1	<1
m+p-xylene	µg/L	<2	<2
Styrene	µg/L	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1
o-xylene	µg/L	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1
Isopropylbenzene	µg/L	<1	<1
Bromobenzene	µg/L	<1	<1
n-propyl benzene	µg/L	<1	<1
2-chlorotoluene	µg/L	<1	<1
4-chlorotoluene	µg/L	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1
Tert-butyl benzene	µg/L	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1
Sec-butyl benzene	µg/L	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1
4-isopropyl toluene	µg/L	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1
n-butyl benzene	µg/L	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1
Hexachlorobutadiene	µg/L	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1
Surrogate Dibromofluoromethane	%	96	96
Surrogate Toluene-d8	%	98	97
Surrogate 4-Bromofluorobenzene	%	105	96

vTRH(C6-C10)/BTEXN in Water					
Our Reference		362930-1	362930-2	362930-3	362930-4
Your Reference	UNITS	MW01	BD1	TB	TS
Date Sampled		30/09/2024	30/09/2024	30/09/2024	30/09/2024
Type of sample		Water	Water	Water	Water
Date extracted	-	03/10/2024	03/10/2024	03/10/2024	03/10/2024
Date analysed	-	04/10/2024	04/10/2024	04/10/2024	04/10/2024
TRH C ₆ - C ₉	µg/L	39	39	[NA]	[NA]
TRH C ₆ - C ₁₀	µg/L	47	42	[NA]	[NA]
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	47	42	[NA]	[NA]
Benzene	µg/L	<1	<1	<1	113%
Toluene	µg/L	<1	<1	<1	112%
Ethylbenzene	µg/L	<1	<1	<1	118%
m+p-xylene	µg/L	<2	<2	<2	112%
o-xylene	µg/L	<1	<1	<1	118%
Naphthalene	µg/L	<1	<1	[NA]	[NA]
Surrogate Dibromofluoromethane	%	96	96	98	97
Surrogate Toluene-d8	%	98	97	101	102
Surrogate 4-Bromofluorobenzene	%	105	96	104	109

svTRH (C10-C40) in Water			
Our Reference		362930-1	362930-2
Your Reference	UNITS	MW01	BD1
Date Sampled		30/09/2024	30/09/2024
Type of sample		Water	Water
Date extracted	-	01/10/2024	01/10/2024
Date analysed	-	03/10/2024	03/10/2024
TRH C ₁₀ - C ₁₄	µg/L	<50	100
TRH C ₁₅ - C ₂₈	µg/L	<100	<200
TRH C ₂₉ - C ₃₆	µg/L	<100	<200
Total +ve TRH (C10-C36)	µg/L	<50	100
TRH >C ₁₀ - C ₁₆	µg/L	<50	130
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	130
TRH >C ₁₆ - C ₃₄	µg/L	<100	<200
TRH >C ₃₄ - C ₄₀	µg/L	<100	<200
Total +ve TRH (>C10-C40)	µg/L	<50	130
Surrogate o-Terphenyl	%	65	#

PAHs in Water			
Our Reference		362930-1	362930-2
Your Reference	UNITS	MW01	BD1
Date Sampled		30/09/2024	30/09/2024
Type of sample		Water	Water
Date extracted	-	01/10/2024	01/10/2024
Date analysed	-	03/10/2024	03/10/2024
Naphthalene	µg/L	<0.1	<0.2
Acenaphthylene	µg/L	<0.1	<0.2
Acenaphthene	µg/L	<0.1	<0.2
Fluorene	µg/L	<0.1	<0.2
Phenanthrene	µg/L	<0.1	<0.2
Anthracene	µg/L	<0.1	<0.2
Fluoranthene	µg/L	<0.1	<0.2
Pyrene	µg/L	<0.1	<0.2
Benzo(a)anthracene	µg/L	<0.1	<0.2
Chrysene	µg/L	<0.1	<0.2
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.4
Benzo(a)pyrene	µg/L	<0.1	<0.2
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.2
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.2
Benzo(g,h,i)perylene	µg/L	<0.1	<0.2
Benzo(a)pyrene TEQ	µg/L	<0.5	<1
Total +ve PAH's	µg/L	<0.1	<0.2
Surrogate <i>p</i> -Terphenyl-d14	%	61	#

Total Phenolics in Water			
Our Reference		362930-1	362930-2
Your Reference	UNITS	MW01	BD1
Date Sampled		30/09/2024	30/09/2024
Type of sample		Water	Water
Date extracted	-	03/10/2024	03/10/2024
Date analysed	-	03/10/2024	03/10/2024
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05

HM in water - dissolved			
Our Reference		362930-1	362930-2
Your Reference	UNITS	MW01	BD1
Date Sampled		30/09/2024	30/09/2024
Type of sample		Water	Water
Date prepared	-	01/10/2024	01/10/2024
Date analysed	-	01/10/2024	01/10/2024
Arsenic-Dissolved	µg/L	<1	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1
Copper-Dissolved	µg/L	44	47
Lead-Dissolved	µg/L	<1	1
Mercury-Dissolved	µg/L	<0.05	<0.05
Nickel-Dissolved	µg/L	24	29
Zinc-Dissolved	µg/L	62	69

OCPs in Water - Trace Level		
Our Reference		362930-1
Your Reference	UNITS	MW01
Date Sampled		30/09/2024
Type of sample		Water
Date extracted	-	01/10/2024
Date analysed	-	04/10/2024
alpha-BHC	µg/L	<0.001
HCB	µg/L	<0.001
beta-BHC	µg/L	<0.001
gamma-BHC	µg/L	<0.001
Heptachlor	µg/L	<0.001
delta-BHC	µg/L	<0.001
Aldrin	µg/L	<0.001
Heptachlor Epoxide	µg/L	<0.001
gamma-Chlordane	µg/L	<0.001
alpha-Chlordane	µg/L	<0.001
Endosulfan I	µg/L	<0.002
pp-DDE	µg/L	<0.001
Dieldrin	µg/L	<0.001
Endrin	µg/L	<0.001
Endosulfan II	µg/L	<0.002
pp-DDD	µg/L	<0.001
Endrin Aldehyde	µg/L	<0.001
pp-DDT	µg/L	<0.001
Endosulfan Sulphate	µg/L	<0.001
Methoxychlor	µg/L	<0.001
Surrogate 4-Chloro-3-NBTF	%	88

OP in water LL ANZECCF/ADWG		
Our Reference		362930-1
Your Reference	UNITS	MW01
Date Sampled		30/09/2024
Type of sample		Water
Date extracted	-	01/10/2024
Date analysed	-	04/10/2024
Dichlorvos	µg/L	<0.05
Mevinphos	µg/L	<0.05
Phorate	µg/L	<0.05
Dimethoate	µg/L	<0.1
Diazinon	µg/L	<0.01
Disulfoton	µg/L	<0.05
Chlorpyrifos-methyl	µg/L	<0.05
Parathion-Methyl	µg/L	<0.05
Ronnel	µg/L	<0.05
Fenitrothion	µg/L	<0.05
Malathion	µg/L	<0.05
Chlorpyrifos	µg/L	<0.009
Fenthion	µg/L	<0.05
Parathion	µg/L	<0.004
Bromophos ethyl	µg/L	<0.05
Methidathion	µg/L	<0.05
Fenamiphos	µg/L	<0.05
Ethion	µg/L	<0.05
Phosalone	µg/L	<0.05
Azinphos-methyl (Guthion)	µg/L	<0.02
Coumaphos	µg/L	<0.05
Surrogate 4-Chloro-3-NBTF	%	88

PCBs in Water - Trace Level		
Our Reference		362930-1
Your Reference	UNITS	MW01
Date Sampled		30/09/2024
Type of sample		Water
Date extracted	-	01/10/2024
Date analysed	-	04/10/2024
Aroclor 1016	µg/L	<0.01
Aroclor 1221	µg/L	<0.01
Aroclor 1232	µg/L	<0.01
Aroclor 1242	µg/L	<0.01
Aroclor 1248	µg/L	<0.01
Aroclor 1254	µg/L	<0.01
Aroclor 1260	µg/L	<0.01
Surrogate TCMX	%	100

Method ID	Methodology Summary
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-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Salt forms (e.g. FeO, PbO, ZnO) are determined stoichiometrically from the base metal concentration.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-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.
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-W2	[NT]
Date Extracted	-			03/10/2024	1	03/10/2024	04/10/2024		03/10/2024	[NT]
Date Analysed	-			04/10/2024	1	04/10/2024	08/10/2024		04/10/2024	[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	98	[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	45	45	0	97	[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	91	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	93	[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	102	[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	94	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	6	6	0	95	[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	101	[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	94	[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	108	[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	109	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	108	[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	101	1	96	97	1	97	[NT]
Surrogate Toluene-d8	%		Org-023	98	1	98	98	0	103	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	86	1	105	97	8	117	[NT]

Client Reference: 86964.04 North Sydney

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			03/10/2024	1	03/10/2024	04/10/2024		03/10/2024	[NT]
Date analysed	-			04/10/2024	1	04/10/2024	08/10/2024		04/10/2024	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-023	<10	1	39	39	0	106	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-023	<10	1	47	42	11	106	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	102	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	101	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	108	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	109	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	108	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	1	96	97	1	97	[NT]
Surrogate Toluene-d8	%		Org-023	98	1	98	98	0	103	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	86	1	105	97	8	117	[NT]

Client Reference: 86964.04 North Sydney

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			02/10/2024	[NT]	[NT]	[NT]	[NT]	04/10/2024	[NT]
Date analysed	-			02/10/2024	[NT]	[NT]	[NT]	[NT]	04/10/2024	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	103	[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]	101	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate o-Terphenyl	%		Org-020	66	[NT]	[NT]	[NT]	[NT]	109	[NT]

Client Reference: 86964.04 North Sydney

QUALITY CONTROL: PAHs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			01/10/2024	[NT]	[NT]	[NT]	[NT]	01/10/2024	[NT]
Date analysed	-			03/10/2024	[NT]	[NT]	[NT]	[NT]	03/10/2024	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[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]	94	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	97	[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]	93	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	93	[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]	88	[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]	70	[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	86	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: Total Phenolics in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			03/10/2024	[NT]	[NT]	[NT]	[NT]	03/10/2024	[NT]
Date analysed	-			03/10/2024	[NT]	[NT]	[NT]	[NT]	03/10/2024	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	[NT]	[NT]	95	[NT]

Client Reference: 86964.04 North Sydney

QUALITY CONTROL: HM in water - dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			01/10/2024	[NT]	[NT]	[NT]	[NT]	01/10/2024	[NT]
Date analysed	-			01/10/2024	[NT]	[NT]	[NT]	[NT]	01/10/2024	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	93	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	104	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: OCPs in Water - Trace Level						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			01/10/2024	[NT]	[NT]	[NT]	[NT]	01/10/2024	[NT]
Date analysed	-			04/10/2024	[NT]	[NT]	[NT]	[NT]	04/10/2024	[NT]
alpha-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	78	[NT]
HCB	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
beta-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
gamma-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	68	[NT]
delta-BHC	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	76	[NT]
Heptachlor Epoxide	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	79	[NT]
gamma-Chlordane	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	75	[NT]
pp-DDE	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	82	[NT]
Dieldrin	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	76	[NT]
Endrin	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Endosulfan II	µg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	78	[NT]
Methoxychlor	µg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	77	[NT]	[NT]	[NT]	[NT]	78	[NT]

QUALITY CONTROL: OP in water LL ANZECCF/ADWG					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			01/10/2024	[NT]	[NT]	[NT]	[NT]	01/10/2024	[NT]
Date analysed	-			04/10/2024	[NT]	[NT]	[NT]	[NT]	04/10/2024	[NT]
Dichlorvos	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	80	[NT]
Mevinphos	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Phorate	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dimethoate	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.01	Org-022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Disulfoton	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyrifos-methyl	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion-Methyl	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	71	[NT]
Fenitrothion	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	80	[NT]
Malathion	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	89	[NT]
Chlorpyrifos	µg/L	0.009	Org-022/025	<0.009	[NT]	[NT]	[NT]	[NT]	71	[NT]
Fenthion	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Parathion	µg/L	0.004	Org-022/025	<0.004	[NT]	[NT]	[NT]	[NT]	90	[NT]
Bromophos ethyl	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Methidathion	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fenamiphos	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	85	[NT]
Phosalone	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Azinphos-methyl (Guthion)	µg/L	0.02	Org-022/025	<0.02	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Coumaphos	µg/L	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	77	[NT]	[NT]	[NT]	[NT]	78	[NT]

Client Reference: 86964.04 North Sydney

QUALITY CONTROL: PCBs in Water - Trace Level					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			01/10/2024	[NT]	[NT]	[NT]	[NT]	01/10/2024	[NT]
Date analysed	-			04/10/2024	[NT]	[NT]	[NT]	[NT]	04/10/2024	[NT]
Aroclor 1016	µg/L	0.01	Org-021/022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	0.01	Org-021/022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	0.01	Org-021/022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	0.01	Org-021/022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	0.01	Org-021/022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	0.01	Org-021/022/025	<0.01	[NT]	[NT]	[NT]	[NT]	74	[NT]
Aroclor 1260	µg/L	0.01	Org-021/022/025	<0.01	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021/022/025	79	[NT]	[NT]	[NT]	[NT]	81	[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

TRH Water(C10-C40) NEPM - # Percent recovery for the surrogate is not possible to report due to interference from analytes (other than those being tested) in sample 362930-2.

The PQL has been raised due to interferences from analytes (other than those being tested) in sample 362930-2.

PAH_W:# Percent recovery for the surrogate is not possible to report due to interference from analytes (other than those being tested) in sample 362930-2.

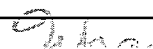
The PQL has been raised due to interferences from analytes (other than those being tested) in sample 362930-2.

GROUNDED
EXPERTISE

3 62 930

30/09/24

CHAIN OF CUSTODY DESPATCH SHEET

Project No: 86964.04		Suburb: North Sydney				To: Envirolab Services											
Project Manager: Huy Tran		Order Number:		Sampler: IR		12 Ashley St, Chatswood NSW 2067											
Email: huy.tran@douglaspartners.com.au, irha.riaz@douglaspartners.com.au						Attn: Sample Receipt											
Turnaround time: ☒ Standard ☐ 72 hour ☐ 48 hour ☐ 24 hour ☐ Same day						(02) 9910 6200 samplerreceipt@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)											
Lab ID	Sample ID			Date Sampled	Sample Type S - soil W - water M - Material	Container Type G - glass P - plastic	Analytes										Notes/ Preservation/ Additional Requirements
	Location / Other ID	Depth From	Depth To				combo 4	voc suite	OCP/OPP/PC B trace levels	BTEX							
1	MW01			30.09.24	W	G/P	x	x	x								
2	BD1			30.09.24	W	G/P	x	x									
3	TB			30.09.24	W	G					x						
4	TS			30.09.24	W	G					x						
Metals to analyse:												LAB RECEIPT					
Number of samples in container:						Transported to laboratory by: dropped off						Lab Ref. No:					
Send results to: Douglas Partners Pty Ltd												Received by:					
Address: 96 Hermitage Road, West Ryde NSW 211						Phone: (02) 9809 0666						Date & Time:					
Relinquished by: IR						Date: 30.09.24		Signed: 		Signed:							

**ENVIROLAB GROUP**

National phone number 1300 424 344

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08 7087 6800 | ✉ adelaide@envirolab.com.au

07 3266 9532 | brisbane@envirolab.com.au

Unit 20/119 Reichardt Road, Winnellie, NT 0820
 ☎ 08 8967 1201 | ✉ darwin@envirolab.com.au

[Copyright and Confidential]

Company:	Douglas Partners			Client Project Name/Number/Site etc (ie report title):	86964104 North Sydney		
Contact Person:	Huy Tran / IR			PO No. (if applicable):			
Project Mgr:	Huy Tran			Envirolab Quote No. :			
Sampler:	Irha Riaz			Date results required:	☒ Or choose: ☐ Standard ☐ Same Day ☐ 1 day ☐ 2 day ☐ 3 day		
Address:	96 Hermitage Rd, West Ryde 2114			Note: Inform lab in advance if urgent turnaround is required - surcharges apply			
Phone:		Mob:		Additional report format:	☐ Esdat ☐ Equis		
Email Results to:	irha.riaz@douglaspartners.com.au huy.tran@douglaspartners.com.au			Lab Comments:			
Email Invoice to:	huy.tran@douglaspartners.com.au						

[illegible]

1

Please tick the box if observed settled sediment present in water samples is to be included in the extraction and/or analysis

Relinquished by (Company):	Received by (Company): ELS Syd.	Lab Use Only	
Print Name:	Print Name: Tony Frink	Job number: 362430	Cooling: Ice / Ice pack / None
Date & Time:	Date & Time: 20/4/24 1500	Temperature: 10°C	Security seal: Intact / Broken / None
Signature:	Signature: T Frink	TAT Req - SAME day / 1 / 2 / 3 / 4 / STD	

SAMPLE RECEIPT ADVICE

Client Details

Client	Douglas Partners Pty Ltd
Attention	Irha Riaz

Sample Login Details

Your reference	86964.04 North Sydney
Envirolab Reference	362930
Date Sample Received	30/09/2024
Date Instructions Received	30/09/2024
Date Results Expected to be Reported	07/10/2024

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	4 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie

Phone: 02 9910 6200
Fax: 02 9910 6201
Email: ahie@envirolab.com.au

Jacinta Hurst

Phone: 02 9910 6200
Fax: 02 9910 6201
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	Total Phenolics in Water	HM in water - dissolved	OCPs in Water - Trace Level	OP in water LL ANZECCF/ADWG	PCBs in Water - Trace Level
MW01	✓	✓	✓	✓	✓	✓	✓	✓	✓
BD1	✓	✓	✓	✓	✓	✓			
TB		✓							
TS		✓							

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

Additional Info

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

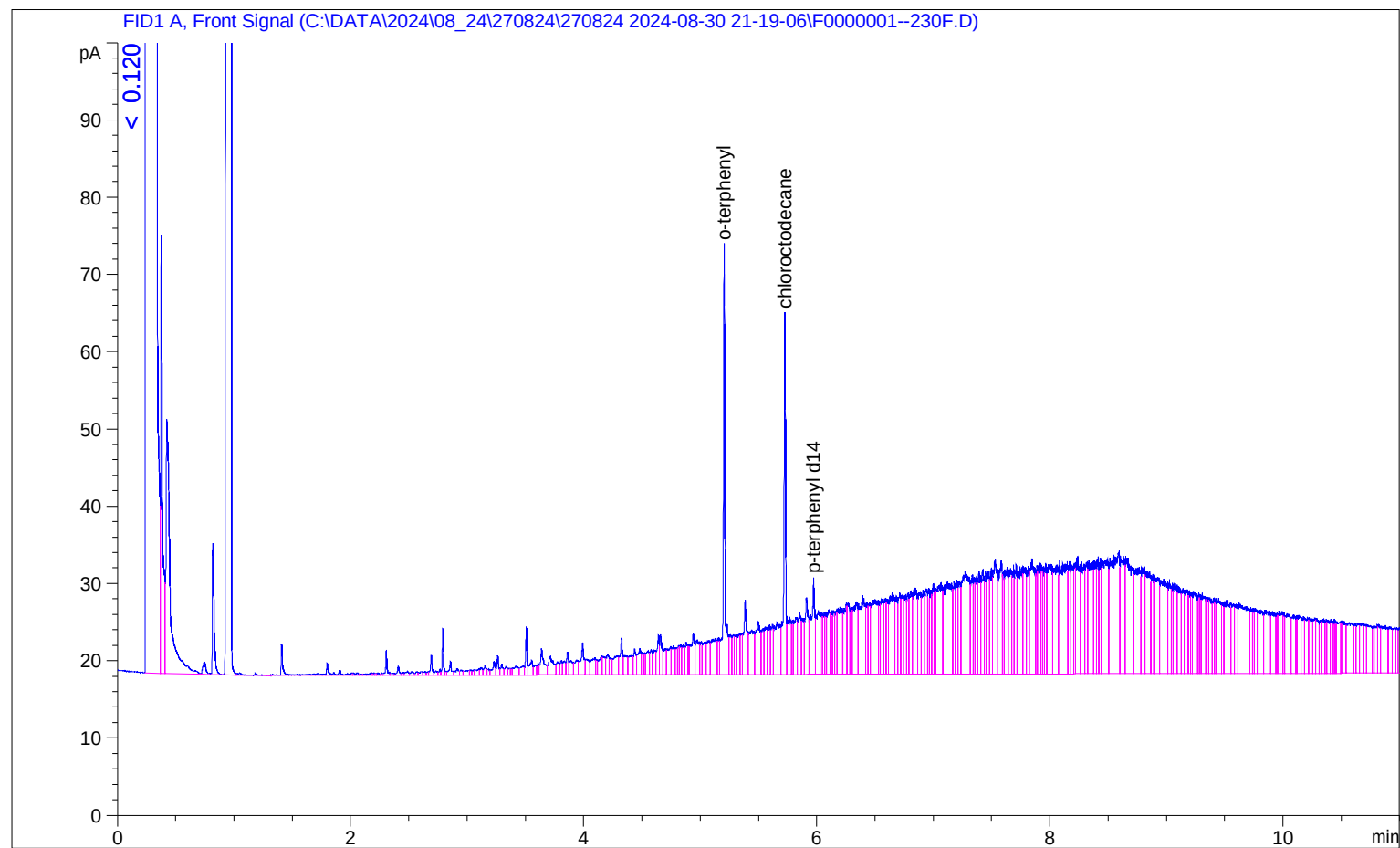
Requests for longer term sample storage must be received in writing.

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

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

Sample Name: s360433-1

```
=====
Acq. Operator   : SYSTEM                      Seq. Line : 230
Sample Operator : SYSTEM
Acq. Instrument : GC6                        Location  : 62 (F)
Injection Date  : 31-Aug-24 2:25:46 PM        Inj       : 1
                                           Inj Volume: 1 µl
Acq. Method     : C:\DATA\2024\08_24\270824\270824 2024-08-30 21-19-06\NEPM JPW H2 V7 50C
                                           start.M
Last changed    : 13-Sep-23 2:29:31 PM by SYSTEM
Analysis Method : C:\00 METHODS\2024\08_24\270824-F PROCESSING.M
Last changed    : 02-Sep-24 10:20:38 AM by SYSTEM
                                           (modified after loading) (Current integration events modified)
Method Info     : FAST TPH WITH 15M HP5 COLUMNS
=====
```



```
=====
External Standard Report
=====
```

```
Sorted By      : Signal
Calib. Data Modified : 28-Aug-24 10:33:05 AM
Multiplier     : 1.0000
Dilution       : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

Sample Name: s360433-1

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [mg/L]	Grp	Name
5.204	VV	60.80103	2.60878e-1	15.86168		o-terphenyl
5.724	VV	I	50.12937	3.08802e-1		chlorooctodecane
5.971	VV	I	27.70247	2.75556e-1		p-terphenyl d14

Totals : 38.97533

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	1.355	3.670	84.53122	24.5186
NEPM >C10-C16	1.935	4.355	160.69929	46.6115
TRH C15-C28	3.670	7.370	1293.73822	383.5947
NEPM >C16-C34	4.355	8.445	2077.09430	615.8605
TRH C29-C36	7.370	8.785	1160.39410	342.8941
NEPM >C34-C40	8.445	9.820	926.00580	273.6310

Totals : 1687.1104

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

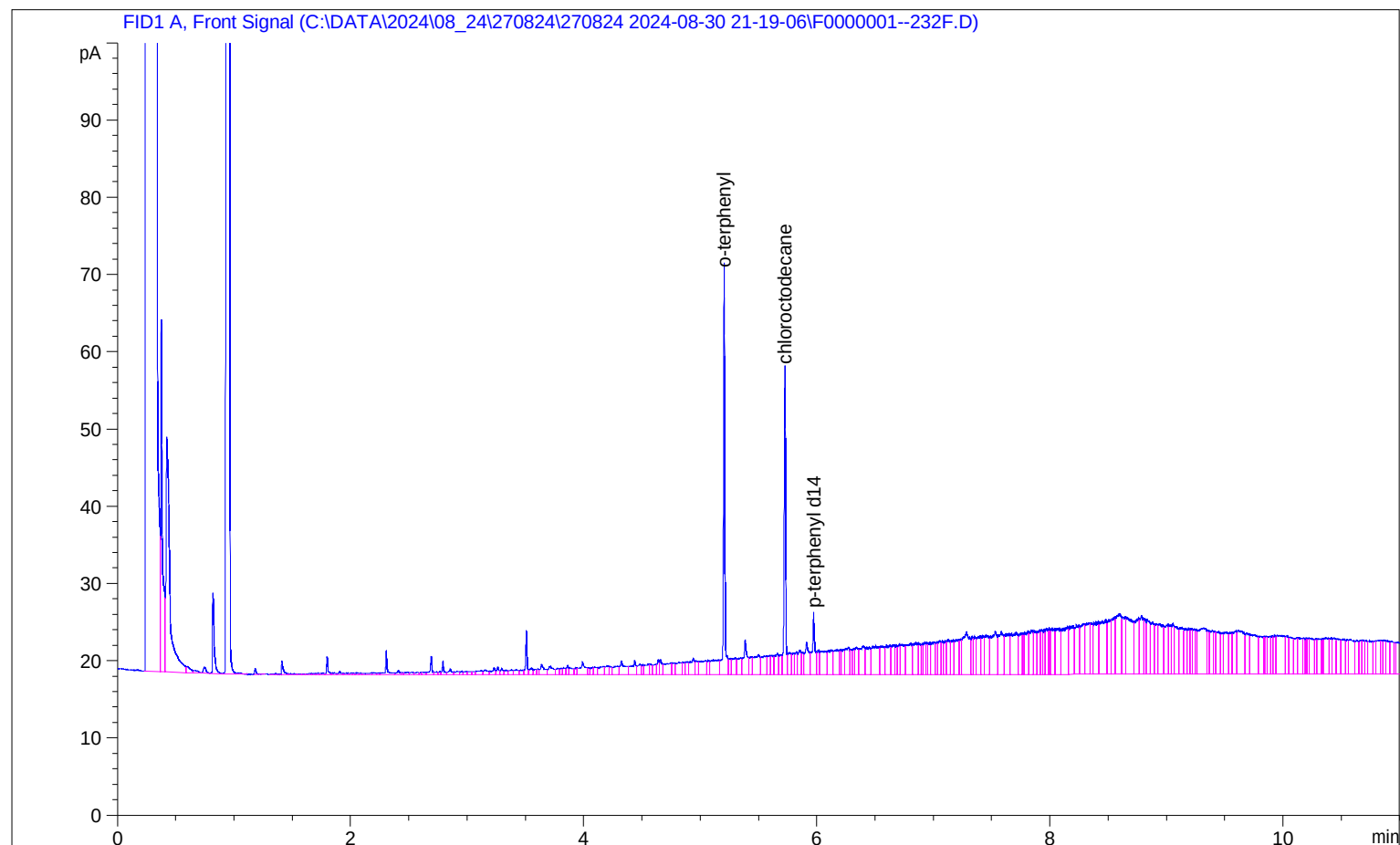
Name	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	84.53122	24.5186
NEPM >C10-C16	160.69929	46.6115
TRH C15-C28	1293.73822	383.5947
NEPM >C16-C34	2077.09430	615.8605
TRH C29-C36	1160.39410	342.8941
NEPM >C34-C40	926.00580	273.6310
o-terphenyl	60.80103	15.8617
chlorooctodecane	50.12937	15.4801
p-terphenyl d14	27.70247	7.6336

Totals : 1726.0858

*** End of Report ***

Sample Name: s360433-1d

```
=====
Acq. Operator   : SYSTEM                      Seq. Line : 232
Sample Operator : SYSTEM
Acq. Instrument : GC6                        Location  : 64 (F)
Injection Date  : 31-Aug-24 2:59:19 PM        Inj       : 1
                                           Inj Volume: 1 µl
Acq. Method     : C:\DATA\2024\08_24\270824\270824 2024-08-30 21-19-06\NEPM JPW H2 V7 50C
start.M
Last changed    : 13-Sep-23 2:29:31 PM by SYSTEM
Analysis Method : C:\00 METHODS\2024\08_24\270824-F PROCESSING.M
Last changed    : 02-Sep-24 10:20:38 AM by SYSTEM
Method Info     : FAST TPH WITH 15M HP5 COLUMNS
=====
```



```
=====
External Standard Report
=====
```

```
Sorted By      : Signal
Calib. Data Modified : 28-Aug-24 10:33:05 AM
Multiplier     : 1.0000
Dilution       : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [mg/L]	Grp	Name
5.204	VV	44.42233	2.60878e-1	11.58883		o-terphenyl
5.725	VV I	36.35672	3.08802e-1	11.22703		chlorooctadecane

Sample Name: s360433-1d

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [mg/L]	Grp	Name
5.971	VV I	13.31814	2.75556e-1	3.66990		p-terphenyl d14

Totals : 26.48576

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	1.355	3.670	50.24533	14.5739
NEPM >C10-C16	1.935	4.355	81.57692	23.6617
TRH C15-C28	3.670	7.370	510.94755	151.4965
NEPM >C16-C34	4.355	8.445	826.09837	244.9390
TRH C29-C36	7.370	8.785	517.01454	152.7768
NEPM >C34-C40	8.445	9.820	519.04177	153.3748

Totals : 740.8226

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

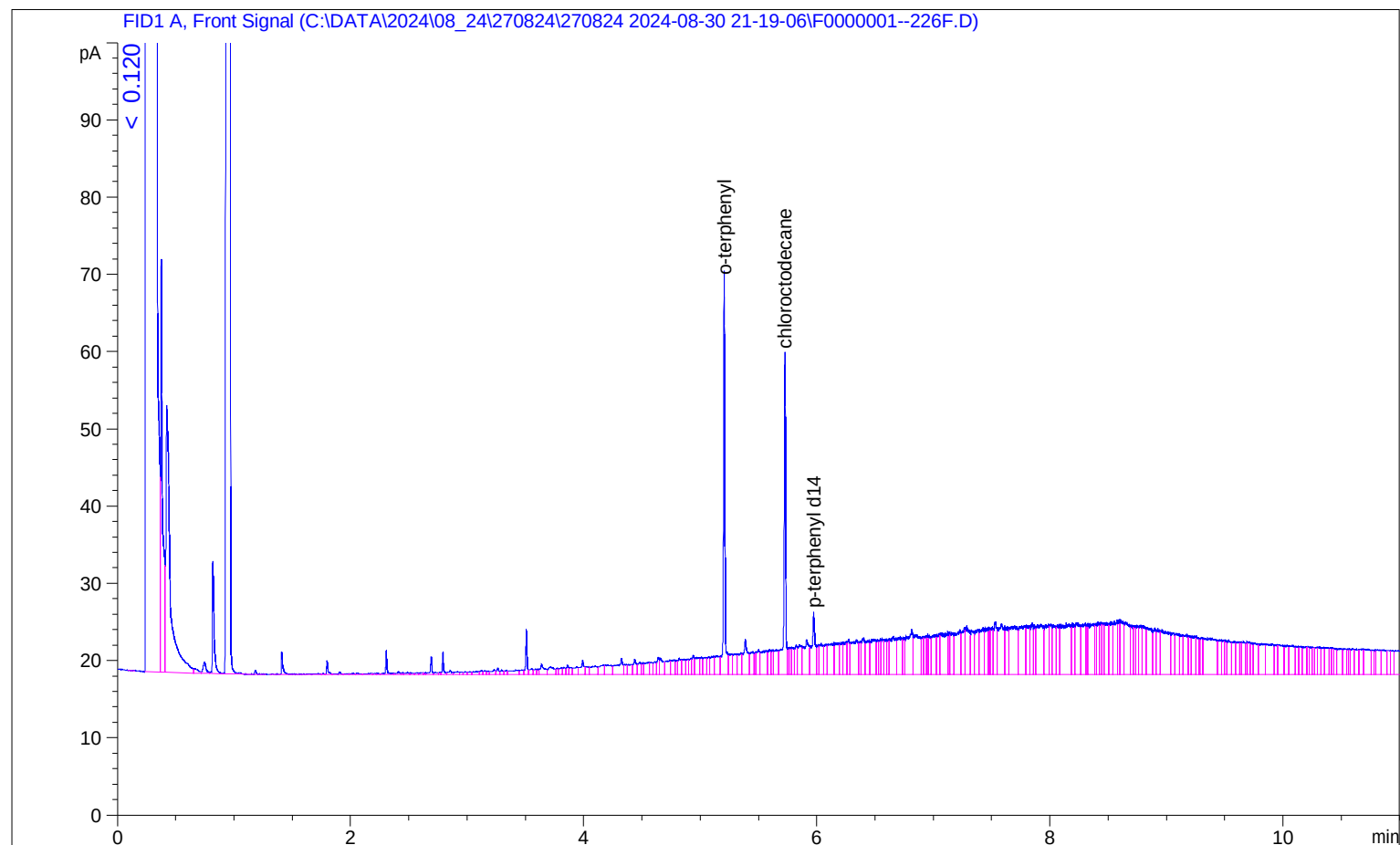
Name	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	50.24533	14.5739
NEPM >C10-C16	81.57692	23.6617
TRH C15-C28	510.94755	151.4965
NEPM >C16-C34	826.09837	244.9390
TRH C29-C36	517.01454	152.7768
NEPM >C34-C40	519.04177	153.3748
o-terphenyl	44.42233	11.5888
chlorooctodecane	36.35672	11.2270
p-terphenyl d14	13.31814	3.6699

Totals : 767.3083

*** End of Report ***

Sample Name: s360433-9

```
=====
Acq. Operator   : SYSTEM                      Seq. Line : 226
Sample Operator : SYSTEM
Acq. Instrument : GC6                        Location  : 58 (F)
Injection Date  : 31-Aug-24 1:18:21 PM        Inj       : 1
                                           Inj Volume: 1 µl
Acq. Method     : C:\DATA\2024\08_24\270824\270824 2024-08-30 21-19-06\NEPM JPW H2 V7 50C
start.M
Last changed    : 13-Sep-23 2:29:31 PM by SYSTEM
Analysis Method : C:\00 METHODS\2024\08_24\270824-F PROCESSING.M
Last changed    : 02-Sep-24 10:57:53 AM by SYSTEM
                 (modified after loading) (Current integration events modified)
Method Info     : FAST TPH WITH 15M HP5 COLUMNS
=====
```



```
=====
External Standard Report
=====
```

```
Sorted By      : Signal
Calib. Data Modified : 28-Aug-24 10:33:05 AM
Multiplier     : 1.0000
Dilution       : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

Sample Name: s360433-9

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [mg/L]	Grp	Name
5.204	VV	45.73479	2.60878e-1	11.93122		o-terphenyl
5.725	VV	I 43.33083	3.08802e-1	13.38065		chlorooctodecane
5.972	VV	I 15.78831	2.75556e-1	4.35057		p-terphenyl d14

Totals : 29.66244

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	1.355	3.670	48.22308	13.9873
NEPM >C10-C16	1.935	4.355	82.43548	23.9107
TRH C15-C28	3.670	7.370	625.27332	185.3942
NEPM >C16-C34	4.355	8.445	988.46968	293.0822
TRH C29-C36	7.370	8.785	537.68457	158.8847
NEPM >C34-C40	8.445	9.820	435.77563	128.7700

Totals : 804.0291

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

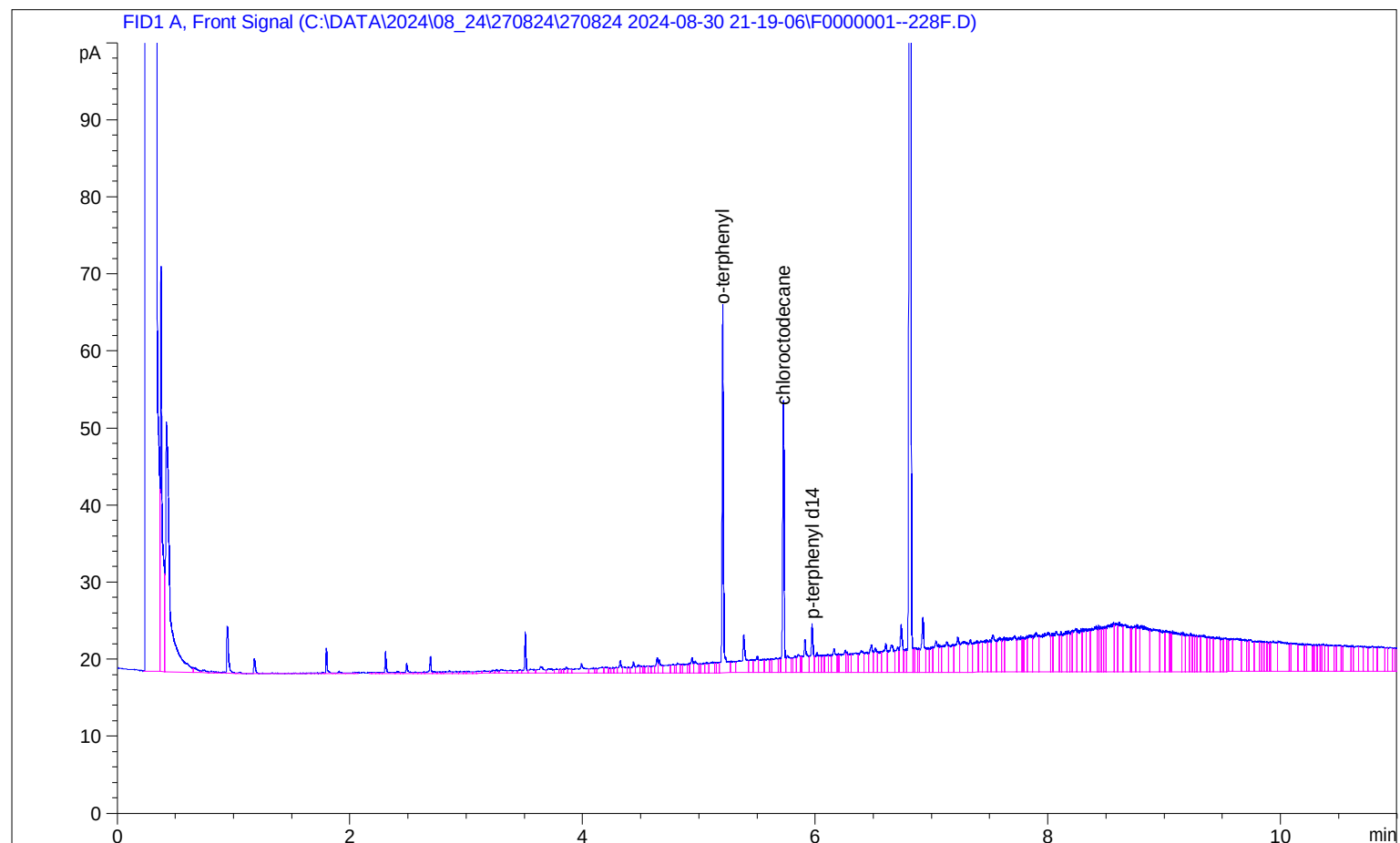
Name	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	48.22308	13.9873
NEPM >C10-C16	82.43548	23.9107
TRH C15-C28	625.27332	185.3942
NEPM >C16-C34	988.46968	293.0822
TRH C29-C36	537.68457	158.8847
NEPM >C34-C40	435.77563	128.7700
o-terphenyl	45.73479	11.9312
chlorooctodecane	43.33083	13.3807
p-terphenyl d14	15.78831	4.3506

Totals : 833.6916

*** End of Report ***

Sample Name: s360433-10

```
=====
Acq. Operator   : SYSTEM                      Seq. Line : 228
Sample Operator : SYSTEM
Acq. Instrument : GC6                        Location  : 60 (F)
Injection Date  : 31-Aug-24 1:51:58 PM        Inj       : 1
                                           Inj Volume: 1 µl
Acq. Method     : C:\DATA\2024\08_24\270824\270824 2024-08-30 21-19-06\NEPM JPW H2 V7 50C
                                           start.M
Last changed    : 13-Sep-23 2:29:31 PM by SYSTEM
Analysis Method : C:\00 METHODS\2024\08_24\270824-F PROCESSING.M
Last changed    : 02-Sep-24 10:20:38 AM by SYSTEM
Method Info     : FAST TPH WITH 15M HP5 COLUMNS
=====
```



```
=====
External Standard Report
=====
```

```
Sorted By      : Signal
Calib. Data Modified : 28-Aug-24 10:33:05 AM
Multiplier     : 1.0000
Dilution       : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [mg/L]	Grp	Name
5.204	VV	41.66510	2.60878e-1	10.86953		o-terphenyl
5.725	VV I	32.48146	3.08802e-1	10.03035		chlorooctodecane

Sample Name: s360433-10

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [mg/L]	Grp	Name
5.972	VV I	8.67853	2.75556e-1	2.39143		p-terphenyl d14

Totals : 23.29130

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	1.355	3.670	34.49550	10.0056
NEPM >C10-C16	1.935	4.355	53.82531	15.6122
TRH C15-C28	3.670	7.370	730.45404	216.5804
NEPM >C16-C34	4.355	8.445	1012.87720	300.3191
TRH C29-C36	7.370	8.785	430.36801	127.1729
NEPM >C34-C40	8.445	9.820	412.01341	121.7483

Totals : 791.4385

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

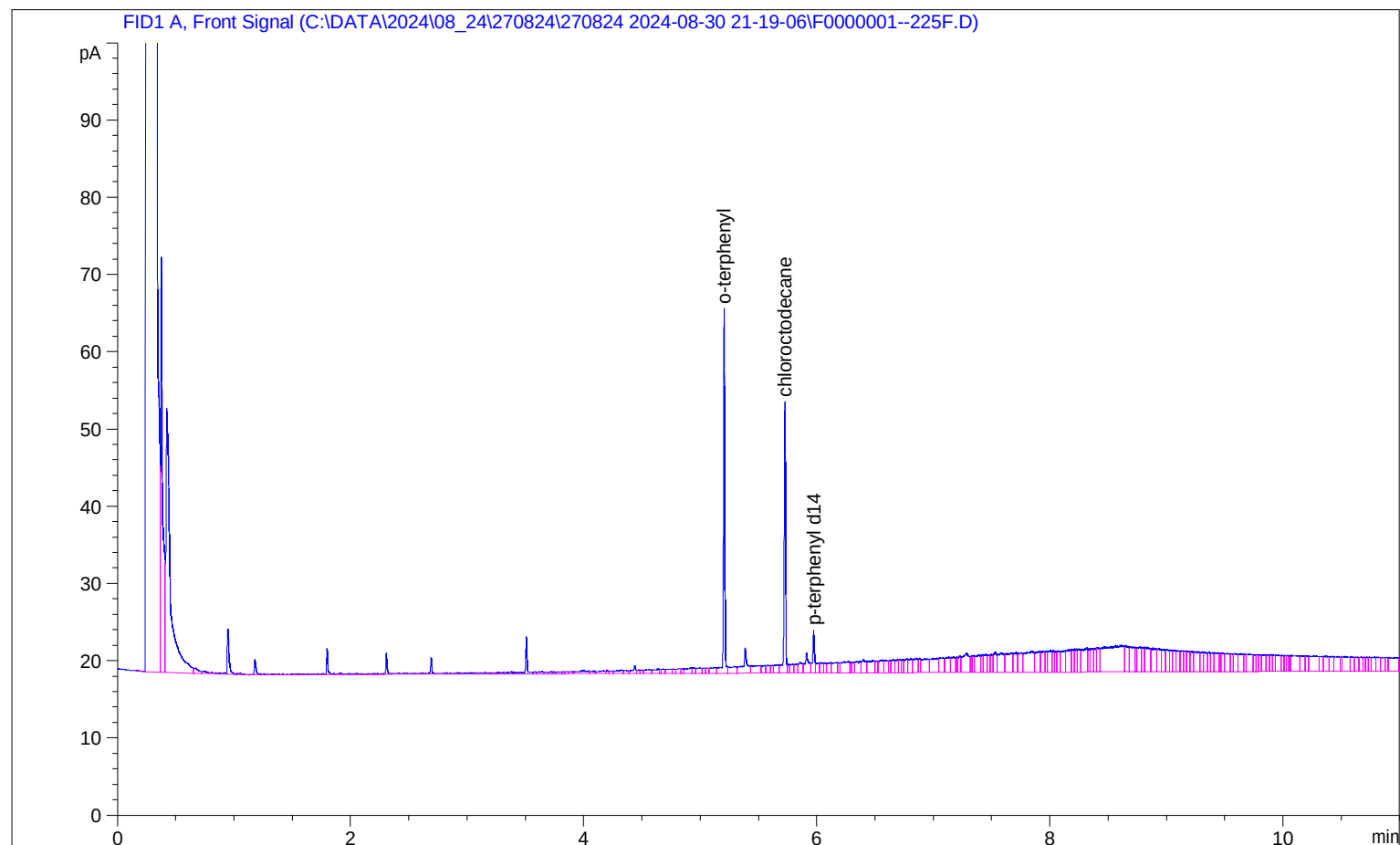
Name	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	34.49550	10.0056
NEPM >C10-C16	53.82531	15.6122
TRH C15-C28	730.45404	216.5804
NEPM >C16-C34	1012.87720	300.3191
TRH C29-C36	430.36801	127.1729
NEPM >C34-C40	412.01341	121.7483
o-terphenyl	41.66510	10.8695
chlorooctodecane	32.48146	10.0303
p-terphenyl d14	8.67853	2.3914

Totals : 814.7298

*** End of Report ***

Sample Name: s360433-13

```
=====
Acq. Operator   : SYSTEM                      Seq. Line : 225
Sample Operator : SYSTEM
Acq. Instrument : GC6                        Location  : 57 (F)
Injection Date  : 31-Aug-24 1:01:17 PM        Inj       : 1
                                           Inj Volume: 1 µl
Acq. Method     : C:\DATA\2024\08_24\270824\270824 2024-08-30 21-19-06\NEPM JPW H2 V7 50C
                                           start.M
Last changed    : 13-Sep-23 2:29:31 PM by SYSTEM
Analysis Method : C:\00 METHODS\2024\08_24\270824-F PROCESSING.M
Last changed    : 02-Sep-24 10:20:38 AM by SYSTEM
Method Info     : FAST TPH WITH 15M HP5 COLUMNS
=====
```



```
=====
External Standard Report
=====
```

```
Sorted By      : Signal
Calib. Data Modified : 28-Aug-24 10:33:05 AM
Multiplier     : 1.0000
Dilution       : 1.0000
Do not use Multiplier & Dilution Factor with ISTDs
```

Signal 1: FID1 A, Front Signal

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [mg/L]	Grp	Name
5.204	VV	37.21381	2.60878e-1	9.70828		o-terphenyl
5.725	VV I	31.23513	3.08802e-1	9.64548		chlorooctadecane

Sample Name: s360433-13

RetTime [min]	Type	Area [pA*s]	Amt/Area	Amount [mg/L]	Grp	Name
5.971	VV I	6.29643	2.75556e-1	1.73502		p-terphenyl d14

Totals : 21.08878

Summed Peaks Report

Signal 1: FID1 A, Front Signal

Signal 1: FID1 A, Front Signal

Name	Start Time [min]	End Time [min]	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	1.355	3.670	23.05294	6.6866
NEPM >C10-C16	1.935	4.355	29.78348	8.6388
TRH C15-C28	3.670	7.370	209.30057	62.0578
NEPM >C16-C34	4.355	8.445	364.41095	108.0482
TRH C29-C36	7.370	8.785	234.99750	69.4413
NEPM >C34-C40	8.445	9.820	224.09808	66.2201

Totals : 321.0928

Final Summed Peaks Report

Signal 1: FID1 A, Front Signal

Name	Total Area [pA*s]	Amount [mg/L]
TRH C10-C14	23.05294	6.6866
NEPM >C10-C16	29.78348	8.6388
TRH C15-C28	209.30057	62.0578
NEPM >C16-C34	364.41095	108.0482
TRH C29-C36	234.99750	69.4413
NEPM >C34-C40	224.09808	66.2201
o-terphenyl	37.21381	9.7083
chlorooctodecane	31.23513	9.6455
p-terphenyl d14	6.29643	1.7350

Totals : 342.1816

*** End of Report ***