Edwards Blasche Group Pty Ltd ABN 54 085 829 250
Environmental Geoscience
Occupational Hygiene
Technical Consultants

STAGE 2 DETAILED (ENVIRONMENTAL) SITE INVESTIGATION (PSI)

154-158 Pacific Parade Dee Why NSW 2099

Lot 1 in DP 34753

Prepared for:
Harrington Dee Why Pty Ltd

(Report ID : EBG-04001.Stage2.DSI.02.25.R00)

28 February 2025

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Abbreviations	
ACM	Asbestos Cement Material
mAHD	metres Australian Height Datum
As	Arsenic
B(a)P	Benzo (a) pyrene (a component of PAHs)
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
BH	Borehole
Cd	Cadmium
Cr	Chromium
EPA (NSW)	Environmental Protection Agency (NSW)
DECCW(NSW)	Dept. Environment, Climate Change & Water (NSW)
Hg	Mercury
MAH	Mono Aromatic Hydrocarbons
NEHF	National Environment Health Forum
Ni	Nickel
OCPs	Organochlorin pesticides
OPPs	Organophosphate Pesticides
PCBs	Polychlorinated Biphenyls
PCM	Potentially Contaminated Media
PAH	Polycyclic Aromatic Hydrocarbons
Pb	Lead
PID	Photo Ionisation Detector
QA/QC	Quality Assurance and Quality Control
RAP	Remedial Action Plan
RPD	Relative Percentage Difference
TCLP	Toxicity Characteristics Leaching Procedure
TRH	Total Recoverable Hydrocarbons
UST	Underground storage tank
VOCs	Volatile Organic Compounds

Distribution:	PDF Copies to: 1. Harrington Dee Why Pty Ltd 2. Platform Architects
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Issued – R00	28 February 2025

EXECUTIVE SUMMARY

ES-1.0 Background

This investigation was authorized by Joanne Erickson and Matt Davison on behalf of client Harrington Dee Why Pty Ltd. The investigation was conducted on one lot identified as Lot 1 in DP 34753 and shall be referred to in this report as the 'Site'. The property is located between the 14 and 12 metre AHD contours. The land slopes away gradually to the north east. It is likely that the surface water and groundwater shall follow the topography, and flow south toward beach sands (ocean).

ES-2.0 Database Information (Stage 1 PSI)

Points taken into consideration to enable recommendations:

- The matters as prescribed by Section 59(2) of the Contaminated Lands Management Act 1997 (documented in the Planning Certificate 10.7) do not indicate that the land is contaminated, or under any orders or notices issued by the EPA NSW.
- The Site is not located within an Acid Sulfate Soil Zone. It is our opinion that PASS (potential acid sulfate soils) shall not be an issue affecting the development.
- The site is not listed on the EPA NSW Contaminated Lands database. However the service station located directly across the street at 148 Pacific Parade was listed: *Declared as significantly contaminated land: Section 11 of the Contaminated Land Management Act 1997 - Declaration No. 20201105; Area No. 3457*
- The site has been used for residential and commercial purposes since at least 1943. In the past, as a real estate agent, coin operated laundry and chemist. Two cafés / restaurants are presently located on site. The larger one facing Pacific Parade is suspected to have been the chemist then laundry. Described as 'Dee Why Coin Laundry' in a web search. Dry cleaning facilities not suspected on site in the past.

ES-3.0 Soil – DSI Sampling & Analysis

- The seven-step DQO process (defined in Section 4) as outlined in the *NEPM 2013* was employed to assess the property in regard to contamination of the soil.
- The area of the lot is 550 square metres. As such according to *EPA NSW Sampling design part 1 – application* (Aug 2022) a minimum of 8 sampling points was required to characterise the site. One sample was taken of the fill layer (0.1 – 0.5 m) and one from the deeper substratum where possible. Deeper samples were taken from two borehole >2.0 metres.
- The detailed site investigation was undertaken using a mechanical augur and hand equipment. Fifteen (16) primary soil samples were collected. Five (5) QA/QC samples were also analysed.
- The soil sample laboratory analysis results were assessed against the relevant *guidelines* listed in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)* May 2013.
- All soil samples were analysed for 'contaminants of concern' by Envirolab Services in Chatswood (NATA accredited laboratory).

- The soil sample laboratory analysis results confirm that heavy metals (x8), PAH, TRH, BTEX, OCPs and PCBs analysis results did not exceed the *HIL D Commercial / Industrial* criteria, the ESLs, the EILs and management criteria (hydrocarbons) in accordance with the *NEPM 2013*. (ie: See Section 7).
- All VOC analysis results were below detection levels.
- The metals copper and zinc analysis results did exceed the *aged EILs* (Ecological Investigation Levels) within shall fill samples of two boreholes. Levels have been derived for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems). This fill shall be removed (possibly as part of remediation to deal with asbestos cement fragment/s) but principally as part of a two basement level excavation. As the shallow fill material shall be removed it is considered that the exceedance above the Ecological Investigation Levels shall not be an issue.
- A PID reading to assess volatile content was taken of a duplicate of the primary samples. The PID readings did not exceed the action level of 30ppm (No reading exceeded 0.1 ppm – see table in Section 4.3).
- Asbestos fibres and/or fines were not detected in the analysed samples at reporting limit of 0.1 g/kg. No respirable fibres detected.
- A fragment of fibreboard was located within the surficial fill (depth 0.25m) of BH01. This borehole is located within the 'pebble landscaped' area between the two cafes (centre of the property). The fragment on analysis contained chrysotile and crocidolite asbestos.
- Suspected natural sands and silts were identified in all boreholes beneath the shallow upper fill sands.

ES-4.0 Groundwater – DSI Sampling & Analysis

- The seven-step DQO process (defined in Section 4) as outlined in the *NEPM 2013* was employed to assess the property in regard to groundwater contamination.
- Three established groundwater wells located along The Strand were sampled. These wells were originally established as part of the groundwater investigation monitoring / sampling of the UPSS leak of the adjacent service station. The wells were originally identified in these reports as MW06, MW07 and MW09. The wells were renamed as MW01, GW02 and GW03 (respectively) for this investigation. A summary of the original groundwater reports is provided in Appendix E.
- All three wells were sealed and in good condition. The wells were bailed using individual disposable bailers on 7 February 2025 (4 days before sampling using a peristaltic pump sampling unit). The water was relatively clear with no odour.
- The groundwater wells were located adjacent to the north/south 'down-gradient' direction (with respect to groundwater).
- On 11 February 2025, 3 groundwater wells were sampled. 4 duplicate QA/QC samples were also analysed.
- All groundwater samples were analysed for 'contaminants of concern' by Envirolab Services in Chatswood (NATA accredited laboratory) and the results assessed against the relevant *guidelines* listed in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)* May 2013.

- The groundwater sample laboratory analysis results confirm that the metals (x8), BTEX, PAHs and VOC analysis results were all below detection, and as such did not exceed the *Groundwater Investigation Levels (GILs*) and *Groundwater HSLs for Vapour Intrusion* in accordance with the *NEPM 2013*. (ie: See Section 7).
- Historical Setting: UPSS Monitoring of Adjacent Service Station (Rpt WSP 2017) :
    - Elevated levels of BTEX (benzene >criteria) and F1 (C6-C10) and F2 (C10-C16) hydrocarbons detected in MW09 (GW03) in 2017
    - Elevated levels of F1 (C6-C10) (>criteria) and F2 (C10-C16) hydrocarbons in MW06 (GW01) in 2014. See Appendix E.
- Low level elevation of F2 (C10-C16) was detected in the two groundwater samples taken from GW01 (F2 – 140 ug/L) and GW03 (66 ug/L). Both these were well below the NEPM criteria for residential of 1000 ug/L but still above detection levels.

ES-5.0 Recommendations

ES-5.1 Suitability of the Site for the Proposed Development

This report is in accordance with:

- *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)*, (1999 amended 2013);
- *State Environmental Planning Policy (Resilience and Hazards) 2021;*
- EPA NSW *Guidelines for Consultants Reporting on Contaminated Sites* 1997 Reprinted August 2011.

Elevated '*contaminants of concern'* above the nominated criteria that may impact the proposed development, were not identified during this Detailed Site Investigation. It is the opinion of EBG that **the site shall be suitable for the proposed development:**

- *Demolition of an existing buildings and construction of a new development with a mixed use building consisting of two levels of basement parking accessed by a car lift from street level. The ground floor consists of two retail tenancies and a residential lobby leading to 9 sole occupancy units across three split level storeys.*

IMPORTANT NOTE: The above is given with the understanding that the **'recommendations'** below are undertaken:

ES-5.2 Recommendation #1: Remedial Action Plan

A Remedial Action Plan shall be prepared to remove the fill/soil impacted with potential asbestos cement fragments identified in the shallow fill of BH01 and possibly other areas to accordance with the *NEPM* 2013, Local Council *State Environmental Planning Policy (Resilience and Hazards) 2021* and *EPA NSW Guidelines for Consultants Reporting on Contaminated Sites (May 2020)* to deal with the areas of environmental concern. Refer to Section 10.2.2

ES-5.2 Recommendation #2: Sub Floor Vapour (hydrocarbon) Assessment

The detected low hydrocarbon results shall not affect the recommendation that the site is suitable for the proposed development. However, considering the historical setting (past investigations), it shall be deemed prudent to undertake a Soil Vapour Assessment to provide design guidance in the event of sub-basement vapour accumulation risk. Considering the current landuse, this investigation shall be undertaken after demolition of the current buildings. The investigation shall be undertaken in accordance with *Vapour Intrusion : Technical Practice Note,* DECCW (EPA NSW) Sept 2010. Refer to Section 10.2.3

ES-5.3 Recommendation #3: Hazardous Material Audit on Buildings

Refer to Section 10.2.4

ES-5.4 Recommendation #4: General Excavation of Fill / Soil – Waste Classification Requirements

Refer to Section 10.2.5

ES-5.5 Recommendation #5: Imported Soil - VENM

Refer to Section 10.2.6

ES-5.6 Recommendation #6: Unexpected Finds Protocol – Unknown Contaminated Soil

Refer to Section 10.2.7

SECTION 1: INTRODUCTION

1.1 Authorization

This investigation was authorized by Joanne Erickson and Matt Davison on behalf of client Harrington Dee Why Pty Ltd. The investigation was conducted on one lot identified as Lot 1 in DP 34753 and shall be referred to in this report as the 'Site'.

1.2 Scope of Work - Consultants Brief

The investigation and report complies where appropriate with the *NEPM 2013, State Environmental Planning Policy (Resilience and Hazards) 2021* and *EPA NSW Guidelines.*

To assess the site EBG Environmental was requested to carry out a Stage 2 Detailed Site (environmental) Investigation.

The total investigation area of the site is approximately 550 square metres and entailed:

- Identify potential areas where contamination may have occurred from current and historical activities.
- Assess the potential for soils to have been impacted by current and historical activities; and
- Assess the suitability of the site for the future development, based on its current condition and the findings of this investigation.

DETAILS OF DATA SOURCES:

Multiple data sources were used to undertake the Stage 2 DSI assessment of the site, and to determine its suitability for the potential commercial/industrial development.

Stage 1 PSI (undertaken by EBG in October 2024):

- Identify all past and present potentially contaminating activities where possible.
- Assessment of site history available within the records and available aerial photographs where applicable.
- Site visit to assess site activities past and present.
- A search of historical title information at the Land and Property Information to assess prior ownership and potential for contamination.
- A review of the available geological, topological maps and acid sulphate soils maps.
- A search for any notices relating to the potential for site contamination as issued by the EPA NSW.

Stage 2 DSI (see investigation area below):

- On 11 February 2025, 16 primary soil samples and 5 QA/QC samples were collected from 8 sampling locations.
- 3 groundwater wells were also sampled including 4 QA/QC samples. The wells were previously installed as part of investigations of the hydrocarbon plume originating from the service station located across the street (The Strand). The wells were placed along the footpath adjacent to the Site. WSP Pty Ltd conducted most of the investigations and multi-Phase Extraction events from 2017 to 2019. It is suspected that WSP installed the three monitoring wells, identified as MW06, MW07 and MW09, during these investigation and remediation procedures. The wells were found to be in good condition with at least a metre of water in each of the three wells. Note: Well MW08 was not located.
- The soil and water samples were analysed by a NATA accredited laboratory (Envirolab) for the potential contaminants of concern.
- The results were compared to the NEPM 2013 criteria appropriate for the site.
- The results of the sampling, analysis, discussion, and recommendations are documented within this report.

1.3 Stage 1 Preliminary Site Investigation (EBG 2015)

General Conclusion: *Considering the data gaps, and potential for on-site contaminant impact, it is recommended that further investigation as defined in the NEPM 2013 and EPA NSW Consultants Reporting on Contaminated Land May 2020, be undertaken.*

> ***Detailed Site Investigation (DSI):*** *A DSI shall be undertaken that shall provide adequate data in accordance with EPA NSW guidelines, to enable the consultant to form an opinion whether the site is suitable for the proposed development, or if not, the remediation measures needed to provide to the client a site suitable for the proposed development.*
>
> ***Soil Sample Investigation:*** *The Site has a total area of 550 m^2. According to EPA NSW Sampling design part 1 – application (Aug 2022) a minimum of 8 sampling points is required to characterise a site of between 500 to 1000 m^2 (or less). This is based on a 95% confidence to detect a hot spot between 9.3 and 13.2 metre circumference.*
>
> *The soil sampling, analysis, QA/QC and reporting shall be in accordance with NEPM 2013. Two samples shall be taken from 7 of the 8 boreholes. Three samples shall be*

taken from one deeper borehole (possibly greater than 2m to account for depth of the two basements). The results of the sub floor vapour assessment results (see below) shall also be incorporated into the DSI. The actual design of the investigation shall be at the discretion of the consultant (CEnvP-SC).

Groundwater Investigation: *The DSI investigation shall also include sampling of the four groundwater wells already installed along the footpath of The Stand (adjacent to the Site). The wells shall first be purged with a disposable bailer and allowed to equilibrate. The groundwater samples shall be taken using a mini-purge low flow peristaltic pump. Field parameters of the groundwater (EC, pH, DO, Redox & Temp.) within all four wells shall be measured and samples only taken after equilibration of the relevant parameters (particularly pH and temperature). The groundwater samples shall be analysed for TRH+BTEXN.*

The sampling, analysis, QA/QC and reporting shall be in accordance with NEPM 2013. The GW samples shall be analysed for the hydrocarbon 'contaminants of concern' (COC). The actual design of the investigation shall be at the discretion of the consultant (CEnvP-SC).

1.3 Limitations of the Report

This report has been prepared to meet the requirements outlined in the scope of work. It does not include evaluation of any other issues. EBG performed the services in a professional manner, in accordance with relevant guidelines and standards, and generally accepted industry practices. EBG does not make any other warranty, expressed or implied, as to the professional advice contained in this report.

Within the guidelines set down for this investigation, every effort has been made to give an accurate assessment of the property identified in this document. EBG does not accept any responsibility for any contamination that may exist in the area now or in the future. EBG accepts no liability for the use of this document by any other person other than the client. This report is based on current and historical information available at the time of writing.

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SECTION 2: PHYSICAL & SITE INFORMATION

2.1 Site Identification

ADDRESS	154 – 158 Pacific Parade, Dee Why NSW
LOCAL GOVERNMENT AUTHORITY	Northern Beaches
LOT & DEPOSITED PLAN	Lot 1 in DP 34753
PARISH	Manly Cove
COUNTY	Cumberland
SITE AREA	Total investigation area of approx. 550 m^2

2.2 Soil Landscape & Geology

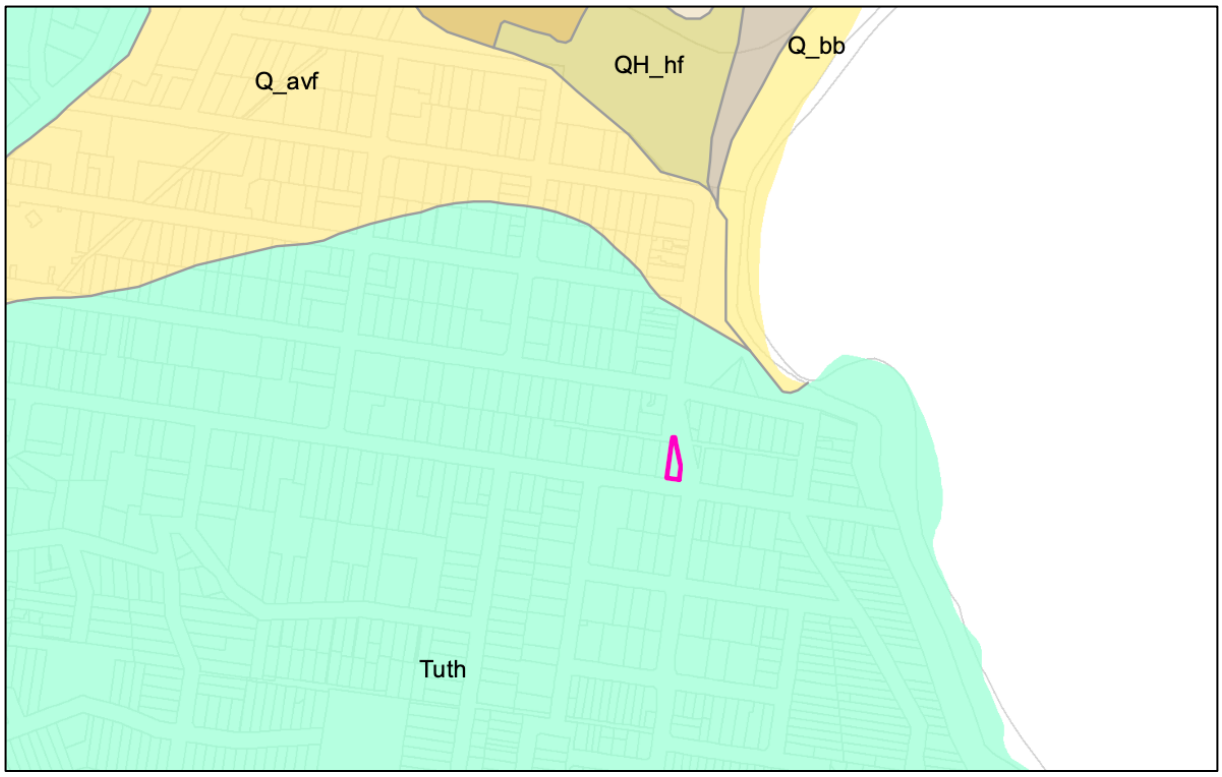
SOIL LANDSCAPE

The site is located within a 'aeolian' soil landscape group. *Soils Landscapes Data Source : NSW Office of Environment and Heritage Creative Commons 3.0 © Commonwealth of Australia:*

The site lies within the Newport (aeolian) soil landscape group. Described as:

- Exposed coastal areas close to marine sand or Hawkesbury alluvial sand sources on the Erina Hills and the Botany Lowlands. Examples occur at Newport, Sans Souci, Banksia, Kogarah, Dee Why, Long Reef, Harbord and Avalon.
- Landscape – gently undulating plains to rolling rises of Holocene sands mantling other soil materials or bedrock. Local relief <10 m, slopes <10% on lower slopes and plateau surface and up to 35% against obstacles facing prevailing winds. Extensively cleared low eucalypt open- woodland, scrub and open-heathland.
- Soils – shallow (<50 cm), well sorted Siliceous Sands (Uc1.21, Uc4.24, Uc4.31) overlying moderately deep (<150 cm) buried sands including yellow Podzolic Soils (Dy5.41, Dy5.51, Dy5.62) with sandy topsoils on crests and gentle slopes; deep (>200 cm) Podzols (Uc2.32) on steep slopes, lower slopes and in depressions.
- Limitations – very high soil erosion hazard, localised steep slopes, very low soil fertility, non- cohesive topsoils.

GEOLOGY



Geological units relevant to the site:

						Distance
Tuth	Hawkesbury Sandstone	Medium- to coarse-grained quartz sandstone with minor shale and laminite lenses.	\Ungrouped Triassic units\\Hawkesbury Sandstone\\	Anisian (base) to Anisian (top)	Sandstone	0m
Q_avf	Alluvial fan deposits	Fluvially-deposited quartz- lithic sand, silt, gravel, clay.	\Alluvium\\Alluvial valley deposits\Alluvial fan deposits\	Quaternary (base) to Now (top)	Clastic sediment	139m
Q_bb	Coastal deposits - beach facies	Marine-deposited quartz- lithic fine- to medium- grained sand, shell and shell material, polymictic gravel.	\Coastal deposits\ \Coastal deposits - beach facies\\	Quaternary (base) to Now (top)	Sand	139m
QH_bd	Coastal deposits - dune facies	Marine-deposited and aeolian-reworked coastal sand dunes.	\Coastal deposits\ \Coastal deposits - dune facies\\	Holocene (base) to Now (top)	Sand	288m
QH_hf	Anthropogenic deposits - fill on Quaternary deposits	Land surface raised >1m above natural level by placement of fill on undifferentiated Quaternary deposits over an extensive area.	\Anthropogenic deposits\ \Anthropogenic deposits - fill on Quaternary deposits\\	Holocene (base) to Now (top)	Anthropogenic material	307m
QH_bl	Coastal deposits - lagoon facies	Organic-rich mud, silt, clay, very fine- to fine-grained quartz-lithic-carbonate sand (marine-deposited), shell and shell grit.	\Coastal deposits\ \Coastal deposits - lagoon facies\\	Holocene (base) to Now (top)	Organic rich sediment	503m
QH_blw	Coastal deposits - lagoon facies (subaqueous)	Organic-rich mud, silt, clay, very fine- to fine-grained quartz-lithic-carbonate sand (marine-deposited), shell and shell grit.	\Coastal deposits\ \Coastal deposits - lagoon facies\Coastal deposits - lagoon facies (subaqueous)\	Holocene (base) to Now (top)	Organic rich sediment	515m
Q_h	Anthropogenic deposits	Anthropocene deposits varying from large man- made clasts (concrete blocks to building demolition rubble) to quarried natural boulders, with interstitial sand-sized to clay matrix.	\Anthropogenic deposits\ \\\	Quaternary (base) to Now (top)	Anthropogenic material	845m

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2024

2.3 Hydrogeology and Topography

The property is located between the 14 and 12 metre AHD contours. The land slopes away gradually to the north east.

It is likely that the surface water and groundwater shall follow the (limited) topography, and flow south toward beach sands (ocean).

A number of registered groundwater bores with relevant information are located near the site associated with the investigation of the adjacent service station hydrocarbon impact.

Groundwater Bore	
Distance and Direction from Site	15m to north
Standing Water Level (m)	4.0
Purpose	Monitoring
Date Completed	11/10/2019
Bore Depth (m)	5.0 m
Driller's Log	0.0 – 0.1 m : CONCRETE 0.1 – 0.6 m : FILL gravelly sand 0.6 – 1.0 m : SAND / SANDY CLAY 1.0 – 5.0 M : CLAYEY SAND

2.4 Acid Sulphate Soil Risk

The Acid Sulfate Data Source Accessed 07/10/2016: NSW Crown Copyright - Planning and Environment - Creative Commons 3.0 (© Commonwealth of Australia) was consulted.

The site is not located in an Acid Sufate Soil Zone. It is our opinion that Acid Sulfate Soils shall not be an issue affecting the development.

2.5 Zoned Land Use

Warringah Local Environmental Plan 2011 - the site is within:

- E1 Local Centre.

2.6 SafeWork NSW Site Search (Dangerous Goods on Premises)

The site prior to the current uses as cafes / restaurant was initially residential then a butcher, chemist and laundry (coin operated – not a dry cleaner). Registration for hazardous / dangerous goods not suspected.

A search of the Stored Chemical Information Database (SCID) and the microfiche records held by Safework NSW was not undertaken.

2.7 Site Title History

SUMMARY OF PROPRIETORS - Lot 1 DP 34753	
YEAR	PROPRIETOR
08 Apr 2014 to date	Harrington Dee Why Pty Limited *(ACN 163 345 702)*
(27 Nov 2015 to date)	*(various current leases shown on Folio Identifier 1/34753 (attached))*
28 Jun 2013	Raymond John Noble
29 Apr 2005	Annie Noble, widow
08 Mar 1991	James Walter Noble, butcher Annie Noble, his wife
(08 Mar 1991 to date)	*(various leases shown on Historical Folio 1/34753 (attached))*
12 Nov 1970	James Walter Noble, butcher Annie Noble, his wife
21 Jun 1961	Elsie Lillian Duncum, married woman
(21 Jun 1961 to 08 Mar 1991)	*(various leases relating to retail shops shown on CTVol 8229 Fol 115)*

SUMMARY OF PROPRIETORS - Lot 1 DP 34753	
YEAR	PROPRIETOR
	(Part Lots 15, 16 & 17 DP 6167 – Area 23 Perches – CTVol 5634 Fol 128)
14 Jan 1947	Elsie Lillian Duncum, wife of David Franklin Duncum, chemist
(14 Nov 1958 to 21 Jun 1961)	*(lease to Harold Louis Thomson Smith, shop proprietor & Mavis Edith Smith, his wife)*
	(Parts Lot 15, 16 & 17 DP 6167 – Area 22 Perches – CTVol 5186 Fol 61)
05 Feb 1941	Elsie Lillian Duncum, wife of David Franklin Duncum, chemist
13 Nov 1940	Lilian Septissima Evelyn Shield, wife of Lionel Wesley Shield, telegraphist
	(Part Lot 15 & Lot 16 DP 6167 – Area 26 Perches – CTVol 2978 Fol 164)
02 Nov 1921	Lilian Septissima Evelyn Shield, wife of Lionel Wesley Shield, telegraphist
29 Jul 1920	Florence Rose, wife of Alfred Victor Rose, engineer
13 Oct 1919	Ernest Mumford Rowe, wool sampler

2.8 EPA PFAS Investigation Program

The NSW Environment Protection Authority (EPA) is undertaking an investigation program to assess the legacy of *per- and poly- fluoroalkyl substances (PFAS) use across NSW.

PFAS are a group of chemicals that include perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). They have many specialty applications and are widely used in a range of products in Australia and internationally.

PFAS are an emerging contaminant, which means that their ecological and/or human health effects are unclear. The EPA is investigating to better understand the extent of PFAS use and contamination in NSW. This will enable the EPA to be better prepared to respond if any health and environmental impacts become known.

The site was not located within the PFAS Investigation Zone.

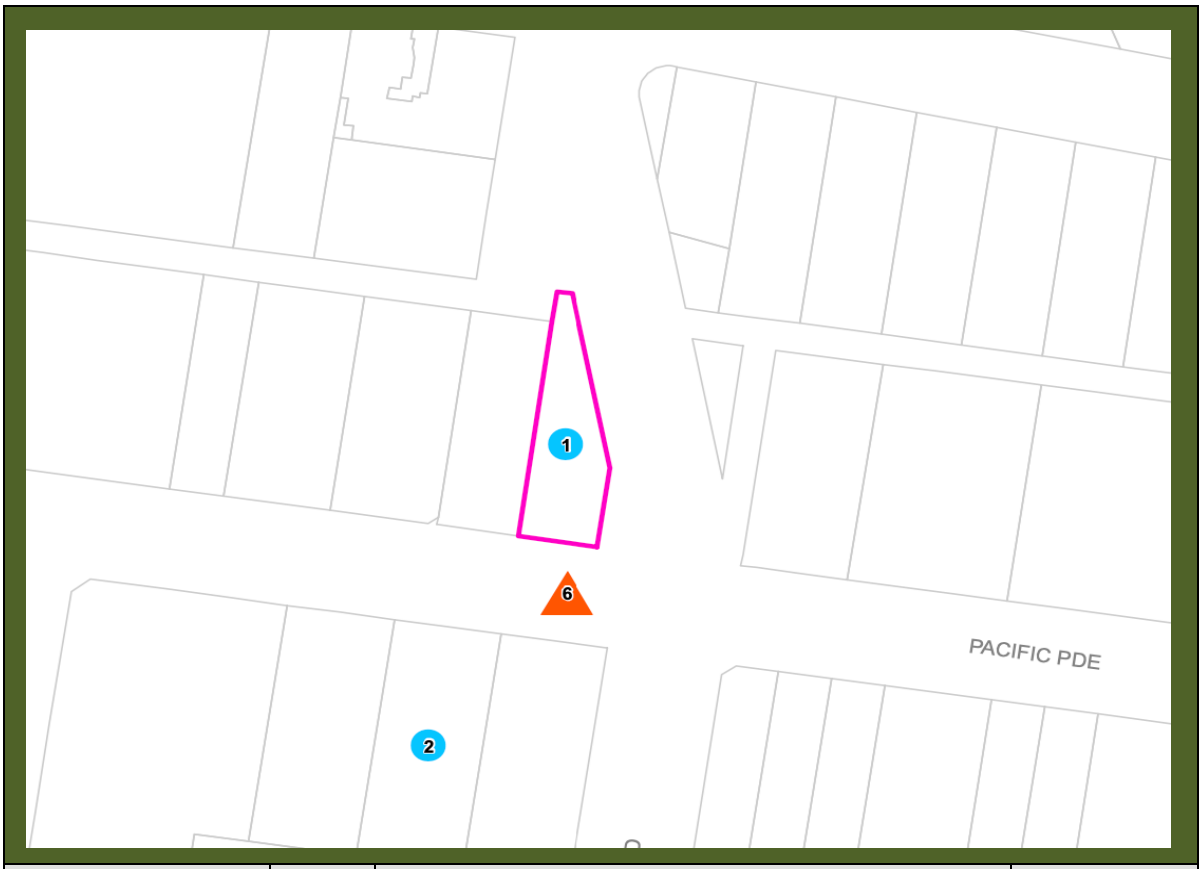
2.9 Historical Air Photos

1943 AIR PHOTO Original residence on site. Service station not built.	
1971 AIR PHOTO Original residence still in place. Original service station in place.	

1982 AIR PHOTO Similar to 1971	
1994 AIR PHOTO Current service station construction now in place. Original residence (possibly commercial) still in place. Smaller building on site to the north.	

2.10 Business Directory Discussion

Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)



Business Activity	Years	Listed Facility in UBD Business Directories	Distance to Site
LAUNDRIES &/OR LAUNDRETTES.	1986	Australian Laundry Services, 154 Pacific Pde., Dee Why. 2099	0m
LAUNDRIES &/OR LAUNDRETTES.(L1850)	1982	Australian Laundry Services Pty. Ltd., 154 Pacific Pde., Dee Why. 2099.	0m
LAUNDRIES &/OR LAUNDRETTES.	1978	Australian Laundry Services Pty. Ltd., 154 Pacific Pde., Dee Why. 2099	0m
LAUNDRIES &/OR LAUNDRETTES.	1975	Speed Oven Coin Laundry., 154 Pacific Pde., Dee Why. 2099	0m
CHEMISTS-PHARMACEUTICAL	1970	Beach (Dee Why) Pharmacy (The), 154 Pacific Pde., Dee Why Beach	0m
Chemists - Pharmaceutical	1965	Beach (Dee Why) Pharmacy (The), 154 Pacific Pde., Dee Why Beach	0m
CHEMISTS-PHARMACEUTICAL	1961	Fawcett, E. H., 154 Pacific Pde., Dee Why	0m
CHEMISTS-PHARMACEUTICAL	1961	Skilling, T. G., 154 Pacific Pde., Dee Why	0m
CHEMISTS-PHARMACEUTICAL	1950	Beach Pharmacy (The), 154 Pacific Pde., Dee Why	0m
CHEMISTS-PHARMACEUTICAL	1950	Fawcett, E. H., 154 Pacific Pde., Dee Why	0m

2.11 EPA NSW Contaminated Land Database

Contaminated Land Record of Notices: A search of the EPA NSW contaminated land database was carried out via the internet. There was one record for the suburb of Dee Why. The Site at 154-158 Pacific Parade was not listed, however the service station located directly across the street at 148 Pacific Parade was listed.

Declaration of significantly contaminated land for 148 Pacific Pde, Dee Why:

Section 11 of the Contaminated Land Management Act 1997

Declaration No. 20201105; Area No. 3457

The Environment Protection Authority (EPA) declares the following land to be significantly contaminated land under s 11 of the Contaminated Land Management Act 1997 (Act).

Land to which this Declaration applies

1. This Declaration applies to significantly contaminated land described as Lot 23 DP738226, Northern Beaches Local Government Area, 148 Pacific Parade, and part of Lot 14 DP6167 (Land).

2. A map of the Land is attached to this Declaration.

Significant Contaminants affecting the Land

3. The EPA has reason to believe that the Land is contaminated with the following substances (Significant Contaminants) in such a way as to warrant regulation as significantly contaminated land under the Act:

(i) Petroleum hydrocarbons including total recoverable hydrocarbons (TRH), and benzene, toluene, ethylbenzene and xylenes.

Nature of harm caused, or that may be caused, by the Significant Contaminants

4. The EPA has reason to believe harm has been caused by the Significant Contaminants, including:

(i) Petroleum hydrocarbons have entered soil and groundwater. Concentrations of Significant Contaminants in the groundwater exceed relevant guideline values and pose a potential risk to human health.

(ii) Concentrations of Significant Contaminants, including benzene, toluene, ethylbenzene, in groundwater exceed the relevant drinking water guidelines, degrading the groundwater and limiting its potential beneficial use.

5. The EPA has reason to believe harm may be caused by the Significant Contaminants, including:

(i) Free phase petroleum product is present in the sub-surface of the Land. It has the potential to act as an ongoing secondary source of groundwater contamination.

(ii) It is likely that the Significant Contaminants may migrate from the Land and cause further degradation of soil and groundwater. Further migration may complete exposure pathways and pose a risk to human health or the environment.

Matters considered before declaring the Land to be significantly contaminated land

6. Before making this Declaration, the EPA has taken into account relevant guidelines and each of the matters listed in s 12(1) of the Act with respect to the Significant Contaminants that the EPA believes cause the Land to be contaminated.

7. The EPA believes that the Land is contaminated, and that the contamination is significant enough to warrant regulation under the Act for the following reasons.

(i) Petroleum products, including toxic constituents such as benzene, toluene, ethylbenzene and xylenes, are present in the sub-surface as light non-aqueous phase liquid and as high dissolved phase concentrations in the groundwater. This has degraded soil and groundwater.

(ii) High concentrations of the Significant Contaminants in groundwater, including TRH F1 and F2 fractions, benzene, toluene and ethylbenzene, exceed guideline values that are protective of human health and pose a potential risk.

(iii) It is likely that the Significant Contaminants may migrate from the Land. This has the potential to complete exposure pathways and pose a risk to human health or the environment.

Further action to carry out voluntary management under the Act

8. The making of this Declaration does not prevent the carrying out of voluntary management of the Land by any person. Any person may submit a voluntary management proposal for the Land to the EPA.

List of Notified Sites: If land is declared as 'significantly contaminated', it is regulated under the CLM Act and will receive notices relating to the management of this contamination. These notices are published on the record of notices for public view.

The public register under section 308 of the Protection of the Environment Operations Act 1997 (the POEO Act) was consulted. The list contains environment protection licences, applications for new licences and to transfer or vary existing licences:

- environment protection and noise control notices
- penalty notices issued by the EPA

- convictions in prosecutions under the POEO Act
- the results of civil proceedings
- licence review information.
- exemptions from the provisions of the POEO Act or regulations
- approvals granted under clause 9 of the POEO (Control of Burning) Regulation
- approvals granted under clause 7A of the POEO (Clean Air) Regulation.

There were four (4) records for the dated 9 September 2024 for the suburb of Dee Why. The Site (investigated in this report) was not listed, however the service station located directly across the street at 148 Pacific Parade was listed.

2.12 Proposed Development

The proposed development is a mixed use building consisting of two levels of basement parking accessed by a car lift from street level. The ground floor consists of two retail tenancies and a residential lobby leading to 9 sole occupancy units across three split level storeys.

2.13 LGA (Northern Beaches Council) - Planning Certificate 10.7

Planning Certificate Under Section 10.7 Environmental Planning and Assessment Act 1979:

- **158 Pacific Parade, Dee Why** - Mascot Council Planning Certificate 10.7 Certificate No: ePLC2024/07209. Issued Date: 18 September 2024.

12. LOOSE-FILL ASBESTOS INSULATION The land does NOT include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division.

Matters arising Section 59(2) under the Contaminated Lands Management Act 1997 prescribes the following matters that are to be specified in a Planning Certificate:

(a) The land is not significantly contaminated land (or part of the land) within the meaning of the Contaminated Lands Management Act 1997 at the date when the certificate is issued.

(b) The land is not subject to a management order within the meaning of the Contaminated Lands Management Act 1997 at the date when the certificate is issued.

(c) The land is not the subject of an approved voluntary management proposal within the meaning of the Contaminated Lands Management Act 1997 at the date when the certificate is issued.

(d) The land is not subject to an ongoing maintenance order within the meaning of the Contaminated Lands Management Act 1997 at the date when the certificate is issued.

(e) The land is not subject to a site audit statement within the meaning of the Contaminated Lands Management Act 1997.

2.14 Site Conditions

2.14.1 Building Condition, Current Occupier and Use

The development consists of one lot and DP identified as Lot 1 in DP 34753. The site is generally triangular and occupies a total area of 550 square metres. Two cafés / restaurants are presently located on site. The larger one facing Pacific Parade is suspected to have been the chemist then laundry. Described as 'Dee Why Coin Laundry' in a web search. The shop is quite small and suspected to be a 'dry cleaning' drop off point. Dry cleaning facilities not suspected on site in the past. The buildings are constructed predominately of brick masonry and concrete (with some fibreboard), with a metal roof. The internal floor of the building is suspected concrete slab and timber.

2.14.2 Surrounding Land Use

North: Residential apartments and housing. Street runs down to Dee Why beach.

East: Residential apartments.

South: Residential apartments.

West: 'United' Service Station (15m to the west).

2.14.3 Fill Material

The exact nature of the sub-surface material is not known. The land appear to generally conform to the natural levels of the land in the area and the general topography of the properties facing Pacific Parade. Considering the slope of the land to the north (down to the beach), some filling may have occurred prior to the construction of the former residence now restaurant facing Pacific Parade.

2.14.4 Underground Tanks and Associated Services

Underground tanks, chemical, oil and waste storage tanks are not suspected to be located on site.

SECTION 3: DATA QUALITY OBJECTIVES (DQO) & ASSESSMENT

3.1 Data Quality Objectives (DQO)

3.1.1 Outline of DQO Process

The EPA NSW *Guidelines for the NSW Site Auditor Scheme* (2nd Edition – April 2006) describes the DQO process thus:

> *The process used to define the type, quantity and quality of data needed to support decisions relating to the environmental condition of the site. The DQOs provide a systematic approach for defining the criteria that a data collection design should satisfy, including when, where and how to collect samples or measurements; determination of tolerable decision error rates; and the number of samples or measurements that should be collected.*

The DQOs are achieved by employing a seven-step process:

Table 3

	STEP	SECTION
1	Define the Problem	Section 3.1.2 1.2 Consultants Brief & Scope of Works
2	Identify the Decisions	Section 3.1.3 Sections 2 : Physical & Site Info Section 2.12: Proposed Development Sections 4: Soil Sampling – Aims & Methodology
3	Identify the Inputs to the Decision	Section 3.1.4 Sections 4 & 5: Section 6: Soil Contaminant Threshold Concentrations Sections 7: Soil Laboratory Results Sections 8: GroundwaterLaboratory Results
4	Define the Study Boundaries	Section 3.1.5 2.1 Site Identification 2.2 Soil Landscape & Geology Section 2 : Physical & Site Info
5	Develop a Decision Rule	Section 3.1.6 Section 2.12: Proposed Development Section 3: Data Quality Objectives (DQO) & Assessment
6	Specify Limits of Decision Errors	Section 5: Data Quality Objectives (DQO) & Assessment
7	Optimise the Design for Obtaining Data	Section 3.1.8 Section 2.12: Proposed Development Sections 4: Soil Sampling – Aims & Methodology

3.1.2 Step 1 - Define the Problem

As there is a possibility that the past land uses may have impacted on the sub-soil, a Stage 2 DSI soil sampling programme and analysis was carried out.

See:

- *Section 4.1.2*
- *1.2 Consultants Brief & Scope of Works*

3.1.3 Step 2 - Identify the Decisions

The primary decision statement that this report shall attempt to resolve is:

> Analysed samples taken from the property shall be assessed against the maximum criteria from the landuse as defined by *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)* 1999 (Amended 2013*) for Commercial / Industrial D Landuse.* By using the results and guidelines the consultant shall make a decision if the property is suitable for the potential proposed landuse, and if not, the appropriate management or remediation necessary to achieve this end.

See:

- *Section 4.1.3*
- *Sections 2 : Physical Settings*
- *Section 2.12: Proposed Development*
- *Section 4: Soil Sampling – Aims & Methodology*

3.1.4 Step 3 – Identify the Inputs to the Decision

The primary inputs used to assess the contamination were:

- Define the site boundaries by the use of survey maps and site inspection.
- Review of the site history and site conditions, including the geology, hydrogeology and topography.
- Assessing contamination identified with the Stage 2 DSI report to facilitate the remediation procedures.
- Using appropriate soil sampling procedures to ensure correct representative data.
- Using correct analytical methods (NATA etc) with quantitation limits below the site assessment criteria.

See:

- Section 4.1.4
- Sections 4 & 5

- Section 6: Soil Contaminant Threshold Concentrations
- Sections 7: Soil Laboratory Results
- Sections 8: Groundwater Laboratory Results

3.1.5 Step 4 – Define the Study Boundaries

The boundaries of the site are documented in *2.1 Site Identification*. The sub surface study boundaries within the above site boundary shall be within the fill down to natural material.

See:

- Section 4.1.5
- 2.1 Site Identification
- 2.2 Soil Landscape & Geology
- Section 2 : Physical & Site Info

3.1.6 Step 5 – Develop a Decision Rule

The purpose of this step was to define the parameter of interest, specify the action level and combine the outputs of the previous steps into an "if ……., then….." decision rule that defines the conditions that would cause the decision maker to choose alternative actions. The following decision rules may be applied:

- Comparison of the results of the validation samples to the criteria (ie: '**If** the results are above criteria **then** remediation may be necessary')
- **If** field QA/QC samples (blanks, spikes etc) are found to contain chemicals of concern **then** further action extra sampling, investigation of procedure shall be undertaken.
- **If** the laboratory QA/QC samples (matrix spikes, reagent blanks) fall outside the acceptance criteria (See 2.7 - DQI) **then** the laboratory shall be contacted, and/or the *samples shall be re-analysed.*

See:

- *Section 4.1.6*
- *Section 2.12: Proposed Development*
- *Section 3: Data Quality Objectives (DQO) & Assessment*

3.1.7 Step 6 – Specify Acceptable Limits on Decision Errors – Data Quality Indicators (DQIs)

The project DQIs address 'Step 6', and have been established to set acceptance limits on field and laboratory data collected as part of the investigation:

Table 4

DQI	FIELD	LABORATORY	ACCEPTANCE LIMITS
Accuracy	Procedures standard Rinsate blanks	Analysis of: Rinsate blanks Matrix spike Lab control sample Lab duplicate <5xPQL Lab duplicate >5xPQL	As per Envirolab Procedures Not detect 70 to 130% 70 to 130% Any RPD is acceptable 0-50% RPD is acceptable
Precision	Standard procedures appropriate to job and applied Collection of split (Inter-lab) duplicate and field (Intra-lab) duplicate	Analysis of: Field (Intra-lab) duplicate Split (Inter-lab) duplicate	 0-50% RPD is acceptable 0-50% RPD is acceptable
Represent-ativeness	Correct material sampled as per RAP or ESA All material needing to be sampled was sampled	All samples analysed in accordance with 'Chain of Custody'	
Compara-bility	Correct sampling protocol applied Sampler appropriately trained Similar climate conditions	Standard procedures used for all labs Similar analytical methods employed by all labs involved	As per NATA requirements As per EBG and DECCW requirements
Complete-ness	All critical locations sampled Samples collected from surface or depth where appropriate	All samples analysed according to procedures Correct methods employed Correct PQLs employed Chain of custody requirements acted upon Lab holding times appropriate	As per appropriate regulations and guidelines

- PQLs – Practical Quantitation Limits
- RPD – Relative Percentage Difference
- RAP – Remedial Action Plan

3.1.8 Step 7 - Optimise the Design for Obtaining Data

EPA (2006) - *Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs.*

This is documented in:

- Section 3.1.8
- Section 2.12: Proposed Development
- Sections 4: Soil Sampling – Aims & Methodology

3.2 Soil Sampling Data Quality Assessment – Field QA/QC

3.2.1 Soil Sampling

- All sampling (digging) equipment was washed with 'Decon 90' and water. The equipment was then rinsed with distilled water between each sampling to avoid cross contamination.
- The samples were collected using a clean disposable nitrile glove.
- The jars and bottles were sealed with a teflon lid and stored and transported in a temperature insulated container cooled with 'ice-bricks'.
- The container was transported to a NATA registered laboratory and analysed as described. The relevant "Chain of Custody Form" is included in Appendix D.
- All washed, teflon lidded jars were obtained from Envirolab.
- Each container was labelled with a unique job and sample No.
- All soil samples were transported to Envirolab Services under refrigerated conditions, using Chain-of-Custody procedures.
- Inter-laboratory duplicate sample was forwarded to Envirolab Services Pty Ltd (Sydney) and then onto Envirolab (Melbourne) for inter-laboratory QA/QC analysis.
- The laboratory analyses were conducted on discrete un-composited samples.

3.2.2 Intra-Laboratory Duplicate (Soil)

An intra-laboratory duplicate is a QC sample that is used to determine the precision associated with all or part of the sample collection. Field duplicates are two independent samples that are collected from the same point at the same time and used to assess the homogeneity and reproducibility of the sampling technique. The precision, or reproducibility is measured from the differences observed in the analysis of duplicate samples. The precision, or reproducibility is measured from the differences observed in the analysis of duplicate samples.

1 Intra-laboratory duplicate of a primary sample was analysed for metals (x8). This complies with NEPM 2013 frequency requirement of 5% (ie: 1 in 20 primary samples):

- Sample 04001/IntraDup was a field duplicate of primary sample 04001/BH03/0.1

Where samples are analysed in duplicate, the quality of the results is assessed by calculating the relative percent difference (RPD) between the reported and repeated results.

The RPD is calculated as follow: $RPD = 200 * |X_1 - X_2| / X_1 + X_2$

Where X_1 and X_2 are the results obtained for the samples and its duplicate, and $|X_1 - X_2|$ is the absolute difference between the duplicate samples.

A relative level of difference up to 50% is considered acceptable. Where the results are below the detection limits a calculation was not possible. Most RPDs for the samples were below or equal 50%. (Note: Copper RPD was above at 96% and probably attributed to the mixed nature of the fill under the house (breakdown of copper in pipes etc). Mercury RPD was above at 66%, however the calculation were undertaken on very low results. The overall RPDs appear to support the sampling procedure.

Analyte - METALS	Units	04001/BH03/0.1	04001/IntraDup	% RPD
Arsenic	mg/kg	<4	<4	-
Cadmium	mg/kg	0.6	0.6	0%
Chromium	mg/kg	9	8	12%
Copper	mg/kg	230	660	96%
Lead	mg/kg	71	81	14%
Mercury	mg/kg	0.1	0.2	66%
Nickel	mg/kg	7	6	16%
Zinc	mg/kg	570	340	50%

3.2.3 Inter-Laboratory Duplicate (Soil)

An inter laboratory duplicate is a sample taken from the same point and the same time as the other samples and analysed by a separate and independent laboratory. This provides some degree of confidence that the analyses conducted by the main laboratory has been undertaken according to acceptable reproducible standards. Where samples are analysed in duplicate, the quality of the results is assessed by calculating the relative percent difference (RPD) between the primary, and duplicate laboratory results.

1 Inter-laboratory duplicate of a primary sample was analysed for metals (x8). This complies with NEPM 2013 frequency requirement of 5% (ie: 1 in 20 primary samples):

- Sample 04001/InterDup was a field duplicate of primary sample 04001/BH03/0.1

The 'inter-laboratory' samples was sent to Envirolab Melbourne laboratories and analysed for heavy metals.

Where samples are analysed in duplicate, the quality of the results is assessed by calculating the relative percent difference (RPD) between the primary and duplicate laboratory results.

The RPD is calculated as follows:

RPD = 200 * X1 - X2 / X1 + X2

Where X1 and X2 are the results obtained for the samples and its duplicate, and X1 - X2 is the absolute difference between the duplicate samples. Some RPDs could not be calculated. A relative level of difference up to 50% is considered acceptable. Where the results are below the detection limits a calculation was not possible. All RPDs for the samples were below 50%. The RPDs appear to support the acceptable reproducible standards of the laboratories.

Analyte - METALS	Units	04001/BH03/0.1	04001/InterDup	% RPD
Arsenic	mg/kg	<4	<4.0	-
Cadmium	mg/kg	0.6	0.72	18%
Chromium	mg/kg	9	9.0	0%
Copper	mg/kg	230	190	20%
Lead	mg/kg	71	90	24%
Mercury	mg/kg	0.1	0.11	10%
Nickel	mg/kg	7	5.3	28%
Zinc	mg/kg	570	410	32%

3.2.4 Equipment Rinsate Sample (Soil)

An equipment rinsate sample is a sample of demineralised water that is poured over or through field sampling equipment that is considered ready to collect. The purpose of the rinsate is to assess the adequacy of the decontamination process and/or the cleanliness of the sampling equipment. The sample may also provide information ensuring that there is no cross contamination of the substances from the sampling equipment used.

One rinsate water sample (04001/RIN) was collected. This was analysed for heavy metals. The analysis revealed that all analytes were below the detectable limits and confirmed that adequate equipment decontamination procedures were undertaken.

3.2.5 Trip Blank (Soil)

A laboratory prepared clean glass jar is filled with clean soil (sand) supplied by the analysing laboratory and is stored within the sample 'esky' and transported to the laboratory with the other samples. The purpose of the trip blank is to detect any sample contamination due to transport activities.

One Trip Blank sample (04001/TB) was analysed for BTEX. The results were all below detection and confirm that the sample(s) were not compromised by volatile hydrocarbons during transport.

3.2.6 Laboratory Prepared Soil - Trip Spike

A laboratory prepared trip spike was prepared by Envirolab Services, transported with the other samples and submitted with the sample batch (sample 04001/TS-soil). This consisted of a sample spiked with a known concentration of BTEX. The purpose of this sample was to quantify the loss of volatiles during transit and analysis. The acceptable percentage recovery of the spike shall be 70 - 130% of the known concentration.

The recovery percentages for the trip spike BTEX were respectively 108%, 108%, 108% and 108% (m+p-Xylene). The recoveries were within the acceptable range of 70 - 130%. The volatile loss was considered acceptable.

3.3 Groundwater Sampling Data Quality Assessment – Field QA/QC

3.3.1 Groundwater Sampling

- The samples were collected using a low flow peristaltic pump.
- The bottles were sealed with a teflon lid and stored and transported in a temperature insulated container cooled with 'ice-bricks'.
- The container was transported to a NATA registered laboratory and analysed as described. The relevant "Chain of Custody Form" is included in Appendix D.
- All washed, teflon lidded jars were obtained from Envirolab.
- Each container was labelled with a unique job and sample No.
- All soil samples were transported to Envirolab Services under refrigerated conditions, using Chain-of-Custody procedures.
- Inter-laboratory duplicate sample was forwarded to Envirolab Services Pty Ltd (Sydney) and then onto Envirolab (Melbourne) for inter-laboratory QA/QC analysis.
- The laboratory analyses were conducted on discrete un-composited samples.

3.3.2 Intra-Laboratory Duplicate (GW)

An intra-laboratory duplicate is a QC sample that is used to determine the precision associated with all or part of the sample collection. Field duplicates are two independent samples that are collected from the same point at the same time and used to assess the homogeneity and reproducibility of the sampling technique. The precision, or reproducibility is measured from the differences observed in the analysis of duplicate samples. The precision, or reproducibility is measured from the differences observed in the analysis of duplicate samples.

1 Intra-laboratory duplicate of a primary sample was analysed for metals (x8). This complies with NEPM 2013 frequency requirement of 5% (ie: 1 in 20 primary samples):

- Sample 04001/GW-Intra was a field duplicate of primary sample 04001/GW03

Where samples are analysed in duplicate, the quality of the results is assessed by calculating the relative percent difference (RPD) between the reported and repeated results.

The RPD is calculated as follow: RPD = 200 * $|X_1 - X_2| / X_1 + X_2$

Where X_1 and X_2 are the results obtained for the samples and its duplicate, and $|X_1 - X_2|$ is the absolute difference between the duplicate samples.
A relative level of difference up to 50% is considered acceptable. Many results are below the detection limits for the duplicate sample. As such a calculation was not possible. The nickel and zinc RPDs at 0%, and the non-detection of other analytes appear to support the sampling procedure.

Analyte - METALS	Units	04001/GW03	04001/GW-Intra	% RPD
Arsenic	ug/kg	<1	<1	-
Cadmium	ug/kg	<0.1	<0.1	-
Chromium	ug/kg	<1	<1	-
Copper	ug/kg	<1	<1	-
Lead	ug/kg	<1	<1	-
Mercury	ug/kg	<0.05	<0.05	-
Nickel	ug/kg	2	2	0%
Zinc	ug/kg	21	21	0%

3.3.3 Inter-Laboratory Duplicate (GW)

An inter laboratory duplicate is a sample taken from the same point and the same time as the other samples and analysed by a separate and independent laboratory. This provides some degree of confidence that the analyses conducted by the main laboratory has been undertaken according to acceptable reproducible standards. Where samples are analysed in duplicate, the quality of the results is assessed by calculating the relative percent difference (RPD) between the primary, and duplicate laboratory results.

1 Inter-laboratory duplicate of a primary sample was analysed for metals (x8). This complies with NEPM 2013 frequency requirement of 5% (ie: 1 in 20 primary samples):

- Sample 04001/GW-Inter was a field duplicate of primary sample 04001/GW03

The 'inter-laboratory' samples was sent to Envirolab Melbourne laboratories and analysed for heavy metals.

Where samples are analysed in duplicate, the quality of the results is assessed by calculating the relative percent difference (RPD) between the primary and duplicate laboratory results.

The RPD is calculated as follows:

RPD = 200 * X1 - X2 / X1 + X2

Where X1 and X2 are the results obtained for the samples and its duplicate, and X1 - X2 is the absolute difference between the duplicate samples. Some RPDs could not be calculated. A relative level of difference up to 50% is considered acceptable. All the results are below the detection limits for the duplicate sample (except zinc). All results of the primary sample were low or below detection. Most results from the duplicate were above detection. The primary analysis appears to be uniformly below the results for the duplicate. The primary lab (Envirolab in Sydney) have been asked for comment. The calculation of the two RPDs able to be calculated (nickel & zinc), were below 50%. Even taking into account the variabilities in the two analyses, altogether the results show a level of similarity.

Analyte - METALS	Units	04001/GW03	04001/GW-Inter	% RPD
Arsenic	ug/kg	<1	<1.0	-
Cadmium	ug/kg	<0.1	0.12	-
Chromium	ug/kg	<1	1.8	-
Copper	ug/kg	<1	2.6	-
Lead	ug/kg	<1	3.0	-
Mercury	ug/kg	<0.05	<0.05	-
Nickel	ug/kg	2	3.2	46%
Zinc	ug/kg	21	34	48%

3.3.5 Trip Blank (Water)

A laboratory prepared clean glass jar is filled with clean soil (sand) supplied by the analysing laboratory and is stored within the sample 'esky' and transported to the laboratory with the other samples. The purpose of the trip blank is to detect any sample contamination due to transport activities.

One Trip Blank sample 04001/TB (water) was analysed for BTEX. The results were all below detection and confirm that the sample(s) were not compromised by volatile hydrocarbons during transport.

3.3.6 Laboratory Prepared Water - Trip Spike

A laboratory prepared trip spike (water) was prepared by Envirolab Services, transported with the other samples and submitted with the sample batch (sample 04001/TS-water). This consisted of a sample spiked with a known concentration of BTEX. The purpose of this sample was to quantify the loss of volatiles during transit and analysis. The acceptable percentage recovery of the spike shall be 70 - 130% of the known concentration.

The recovery percentages for the trip spike BTEX were respectively 113%, 119%, 119%, 112% (m+p-Xylene), and 118% (o-Xylene). The recoveries were within the acceptable range of 70 - 130%. The volatile loss was considered acceptable.

3.4 Data Quality Assessment – Laboratory QA/QC

3.4.1 NATA Registration of Laboratories

The analysis of the primary samples was undertaken by Envirolab Services (Sydney), and the analysis of the secondary samples (inter-lab duplicate) was analysed by Envirolab (Melbourne). These laboratories are accredited by the National Association of Testing Authorities, NATA. The Laboratories maintain an extensive NATA accreditation, and methodology testing and development is performed in accordance with NATA requirements. NATA accreditation includes compliance with ISO Guide 25 "General Requirements for the Technical Competence of Testing Laboratories".

Laboratories meeting the requirements of this guide comply, for calibration and testing activities, with the relevant requirements for the ISO 9000 series of standards, including those of the model described in ISO 9002 (AS 3902 is the Australian equivalent) when they are acting as suppliers producing calibration and test results.

All analyses are performed in accordance with Australian Standards ("AS"), American Public Health Association ("APHA"), US-EPA or other standards meeting the NEPM 2013 criteria.

3.4.2 Objectives of Analysis Laboratory Quality Assurance Procedures

All laboratories used in this project utilized their own QA procedures for analysis. The objectives of the laboratory internal QA programme were to provide data on the accuracy and precision of the analytical results.

A description of the methods is listed below:

Reagent Blank: Sample free agents carried through the preparation / digestion procedure and analysed at the beginning of every sample batch analysis. For larger projects, a reagent blank is prepared and analysed with every 20 samples.

Matrix Spike Duplicates: Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and prior to the extraction / digestion procedure. They are used to document the precision and bias of a method in a given sample matrix. Where there is not enough sample available to prepare a spiked sample, another known soil/sand or water may be used. (It is usual for a duplicate spiked sample to be prepared at least every 20 samples).

Surrogate Spike: Added to all samples requiring analysis for organics (where relevant) prior to extraction. Used to determine the extraction efficiency. They are organic compounds which are similar to the target analyte(s) in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples.

Internal Standard: Added to all samples requiring analysis for organics (where relevant) after extraction process; the compounds serve to give a standard of retention time and response, which is invariant from run to run with the instruments.

Duplicate: A separate portion of a sample being analysed which is treated the same as the other samples in the batch. Usually a duplicate is prepared at least every 20 samples.

Control Standards: Prepared from a source independent of the calibration standards. At least one control standard is included in each run to confirm calibration validity.

Laboratory Reporting: For laboratories with appropriate QA, the reagent blank, duplicates, matrix spikes and surrogate spikes are reported along with the results. The targeted recovery range for the laboratory spikes, controls and surrogates shall be 70% to 130% of the known addition.

3.4.3 Review of Laboratory QA/QC

The primary laboratory used for chemical analysis of the validation samples was Envirolab Services. Envirolab Services are a NATA accredited laboratory. All laboratory QA/QC results are attached. The conclusions from the results of the QA/QC data are:

- The results for the method blanks indicate that all were less than the PQL. The blanks are sample free agents carried through the preparation/extraction/digestion procedure and analysed at the beginning of every batch analysis. The results indicate that no significant contamination had occurred during the laboratory analysis.
- Most matrix spike % recoveries were between 70% and 130% (anomalies were: Naphthalene at 66%, Acenaphthylene at 60%, Fluoranthene at 66%, Endrin – LCS-8 at 68%).

The figures indicate that the laboratory analysis process was accurate and that any method bias from the sample matrix was not significant.

The laboratory QA/QC data as supplied for each analysis confirm acceptable precision and accuracy of the analytical result for Envirolab.

3.4.4 Data Completeness Evaluation

Completeness is a quality assurance/quality control term and is defined as the measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions.

The goals for this project shall be 95% completeness. Completeness is assessed or calculated with respect to the following equation:

C = 100 x (V/N): where: C = percent completeness, V = number of measurements judged valid, N = total number of measurements.

SOIL:

1. Sample Collection: 16 primary soil samples and 5 QA/QC samples were collected as specified within the proposal. All samples were delivered to the laboratory successfully using appropriate Chain of Custody procedures.

2. Sample Analysis: All primary and the QA/QC sample were successfully analysed and results received from Envirolab Services.

3. Duplicate/Primary Sample Assessment: The data completeness was calculated on the duplicate, where the high (>50%) samples were discarded.

Most RPDs were less than (or near) 50% for the intra and inter laboratory duplicate.

With respect to the above comments, all the valid data expected to be obtained, was able to be used to assess the 'completeness of data'.

GROUNDWATER:

1. Sample Collection: 3 primary soil samples and 4 QA/QC samples were collected as specified within the proposal. All samples were delivered to the laboratory successfully using appropriate Chain of Custody procedures.

2. Sample Analysis: All primary and the QA/QC sample were successfully analysed and results received from Envirolab Services.

3. Duplicate/Primary Sample Assessment: The data completeness was calculated on the duplicate, where the high (>50%) samples were discarded.

All RPDs were less than (or near) 50% for the intra and inter laboratory duplicate.

With respect to the above comments, all the valid data expected to be obtained, was able to be used to assess the 'completeness of data'.

In Summary: *Data Completeness was 100%.*

SECTION 4: SOIL SAMPLING – AIMS AND METHODOLOGY

4.1 Purpose and Aims

The area of the lot is 550 square metres. As such according to *EPA NSW Sampling design part 1 – application* (Aug 2022) a minimum of 8 sampling points is required to characterise the site (based on a 95% confidence to detect a hot spot of 9.3 - 13.2 metre circumference for a site of between 500 and 1,000 sqm). One sample was taken of the fill layer (0.1 – 0.5 m) and one from the deeper substratum where possible. Deeper samples were taken from two borehole >2.0 metres.

4.2 Sampling Procedure

The locations of the boreholes (BH#) are shown in *Figure 3 - 04001-F03 (Appendix A)*. The boreholes were undertaken using a mechanical and hand augur equipment on 11 February 2025.

4.2.1 Soil Primary Samples

These were sent to the primary laboratory (Envirolab Sydney). The samples were analysed for:

ANALYSIS FREQUENCY	ANALYTE	ANALYTE ABBREVIATION
All samples	Heavy metals x8	M8 - As, Cd, Cu, Cr, Ni, Hg & Zn
All samples	Polycyclic Aromatic Hydrocarbons	PAHs
All samples	Total Recoverable Hydrocarbons	TRHs
All samples	Benzene, Toluene, Ethylbenzene, Xylene	BTEX
Selected samples	Polychlorinated biphenyl	PCBs
Selected samples	Organochlorine pesticides	OCPs
Selected samples	Volatile Organic Compounds	VOCs
Selected samples	Organophosphorus pesticides	OPPs
Selected samples	Asbestos	-
Selected samples	Acidity	pH

4.2.2 QA/QC

1. One intra-laboratory QA/QC sample was taken as a duplicate of the respective primary sample and analysed by the primary laboratory (Envirolab Sydney).

2. One inter-laboratory QA/QC sample was taken as a duplicate of the respective primary sample and analysed by the secondary laboratory (Envirolab - Melbourne)
3. One equipment water rinsate QA/QC sample was taken and analysed for metals (x8).
4. One soil trip blank was analysed for BTEX.
5. One soil trip sike analysed for volatile loss.

4.3 Soil Sample Details and Conditions

#	SAMPLE ID#	BH	DEPTH (m)	PID (ppm)	SUB-SOIL CONDITIONS	ANALYSIS
1	04001/BH01/0.2	1	0.2	0.1	FILL - clayey sand, f-m grain, dark brown, moist, No odour	Metals x8, TRH+BTEX, PAH, pH
2	04001/BH01/0.2-Asbestos Cement Fragment	1	0.25	-	FILL - clayey sand, f-m grain, dark brown, moist. No odour	Asbestos content
3	04001/BH01/0.7	1	0.7	-	FILL - clayey sand, f-m grain, dark brown, moist. No odour	Metals x8, TRH+BTEX, PAH
4	04001/BH01/2.6	1	2.6	-	SANDY CLAY - h plas, grey. No odour	Metals x8, TRH+BTEX, PAH, VOC
5	04001/BH02/0.1 (grab)	2	0.1	-	SAND - f-m grain, grey, minor building waste at surface. No odour	Metals x8, TRH+BTEX, PAH, pH, asbestos
6	04001/BH03/0.1	3	0.1	0.0	FILL SAND - with concrete rubble. No odour	Metals x8, TRH+BTEX, PAH, pH
7	04001/IntraDup	3	0.1	-	Intra laboratory duplicate of 04001/BH03/0.1	Metals x8
8	04001/IntraDup	3	0.1	-	Inter laboratory duplicate of 04001/BH03/0.1	Metals x8
9	04001/BH03/0.5	4	0.5	-	CLAYEY SAND - grey, f-m grain. No odour	Metals x8, TRH+BTEX, PAH, CEC
10	04001/BH04/0.1	4	0.1	0.1	SILTY SAND - grey, f-m grain, some concrete and brick fragments at surface. No odour	Metals x8, TRH+BTEX, PAH, pH
11	04001/BH04/0.5	4	0.5	-	SILTY SAND - grey, f-m grain, some concrete and brick fragments at surface. No odour	Metals x8, TRH+BTEX, PAH
12	04001/BH05/0.1	5	0.1	0.1	CLAYEY SAND - grey, f-m grain, mixed with concrete rubble. No odour	Metals x8, TRH+BTEX, PAH, OCP, PCB, asbestos, pH
13	04001/BH06/0.1	6	0.1	0.1	SILTY SAND - drk grey, f-m grain, some roots. No odour	Metals x8, TRH+BTEX, PAH, asbestos
14	04001/BH06/0.7	6	0.7	0.1	CLAYEY SAND - grey to dark grey. No odour	Metals x8, TRH+BTEX, PAH
15	04001/BH06/2.1	6	2.1	-	SANDY CLAY – grey. No odour	Metals x8, TRH+BTEX, PAH, VOC
16	04001/BH07/0.1	7	0.1	0.1	SILTY SAND - dark grey, f-m grain. No odour	Metals x8, TRH+BTEX, PAH, asbestos, pH
17	04001/BH07/0.8	7	0.8	-	CLAYEY SAND - grey, f-m grain. No odour	Metals x8, TRH+BTEX, PAH
18	04001/BH08/0.2	8	0.2	0.0	SILTY SAND - dark grey, f-m grain, some crushed yellow sandstone	Metals x8, TRH+BTEX, PAH, pH
19	04001/BH08/0.8	8	0.8	-	CLAYEY SAND - grey to drk grey, f-m grain	Metals x8, TRH+BTEX, PAH, VOC
20	03008/TB	-	-	-	QA/QC – trip blank	BTEX
21	03008/TS	-	-	-	QA/QC – trip spike	% volatile loss

SECTION 5: GROUNDWATER SAMPLING – AIMS AND METHODOLOGY

5.1 Purpose and Aims

On 11 February 2025, 3 groundwater wells were sampled including 2 QA/QC samples. The three wells had been previously installed (possibly by WSP Pty Ltd) around 2017. The wells were installed as part of the investigation of the fuel leak from UPSS tanks located sub surface within the service station (across the street – The Street). The three wells were identified in the past investigations as MW06, MW07 & MW09 respectively.

All three wells were sealed and in good condition. The wells were bailed using individual disposable bailers on 7 February 2025 (4 days before sampling using a peristaltic pump sampling unit). The water was relatively clear with no odour.

5.2 Sampling Procedure

The locations of the groundwater wells (GW#) are shown in *Figure 2 - 03008-F02 (Appendix A)*. The groundwater sampling was undertaken using a low flow peristaltic pump on 11 February 2025.

5.2.1 Groundwater Primary Samples

These were sent to the primary laboratory (Envirolab Sydney). The samples were analysed for:

ANALYSIS FREQUENCY	ANALYTE	ANALYTE ABBREVIATION
All samples	Heavy metals x8	M8 - As, Cd, Cu, Cr, Ni, Hg & Zn
All samples	Polycyclic Aromatic Hydrocarbons	PAHs
All samples	Total Recoverable Hydrocarbons	TRHs
All samples	Benzene, Toluene, Ethylbenzene, Xylene	BTEX
All samples	Nitrogen, Ammonia, Nitrate, Total Phosphorus	-

5.2.2 QA/QC

1. One intra-laboratory QA/QC sample was taken as a duplicate of the respective primary sample and analysed by the primary laboratory (Envirolab Sydney).

2. One inter-laboratory QA/QC sample was taken as a duplicate of the respective primary sample and analysed by the secondary laboratory (Envirolab - Melbourne)

3. One water trip blank was analysed for BTEX.

4. One water trip sike analysed for volatile loss.

5.3 Groundwater Sample Details and Conditions

#	SAMPLE ID#	CONDITIONS	ANALYSIS
1	04001/GW01	Relative clear. No odour. Muddy at max. well depth. Water temp: 23.5 C. Weather: fine (warm). Well already installed for former investigations of fuel leak in adjacent service station. Well ID in those report: MW06	Metals x 8, TRH+BTEX, PAH, VOC, pH
2	04001/GW02	Relative clear. No odour. Muddy at max. well depth. Water temp: 24.5 C. Weather: fine (warm). Well already installed for former investigations of fuel leak in adjacent service station. Well ID in those report: MW07.	Metals x 8, TRH+BTEX, PAH, VOC, pH
3	04001/GW03	Relative clear. No odour. Muddy at max. well depth. Water temp: 25.0 C. Weather: fine (warm). Well already installed for former investigations of fuel leak in adjacent service station. Well ID in those report: MW09	Metals x 8, TRH+BTEX, PAH, VOC, pH, Turbidity, Ammonia, Total Nitrogen, Total Phosphorus, Total Suspended Solids
4	04001/GW-Intra	QA/QC - Intra laboratory duplicate of 04001/GW03 (Sydney Lab)	Metals x 8
5	04001/GW-Inter	QA/QC - Inter laboratory duplicate of 04001/GW03. (Melbourne Lab)	Metals x 8
6	04001/TB	QA/QC – trip blank	BTEX
7	04001/TS	QA/QC – trip spike	% volatile loss

SECTION 6: CONTAMINANT THRESHOLD CONCENTRATIONS - ACCEPTANCE CRITERIA

6.1 Health Investigation Levels (HILs)

The development proposal entails the construction of ground floor commercial with two basements and construction of three levels of upper residential. The sample results were assessed against the soil contaminant threshold concentrations set at levels appropriate to the proposed ground floor ***commercial / industrial*** landuse (commercial on the ground floor in accordance with the NEPM 2013). The results are therefore assessed against the Health Investigation Levels (HILs) listed in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM*) – Schedule B1 (1999 amended 2013). **HIL D: Commercial / Industrial** *– includes premises such as shops, offices, factories and industrial sites.*

Table 1A(1) – NEPM 2013

	Health Investigation Levels - HILs			
Substance All values in mg/kg	**HIL A Residential A**	**HIL B Residential B**	**HIL C Recreational**	**HIL D Commercial/ Industrial**
Metals & metalloids (NEPM 2013)				
Arsenic	100	500	300	**3 000**
Cadmium	20	150	90	**900**
Chromium (VI)	100	500	300	**3600**
Copper	6,000	30,000	17,000	**240,000**
Lead	300	1,200	600	**1,500**
Mercury (inorganic)	40	120	80	**730**
Nickel	400	1,200	1,200	**6,000**
Zinc	7,400	60,000	30,000	**400,000**
Polycyclic Aromatic Hydrocarbons				
PAHs (total)	300	400	300	**4,000**
Benzo(a)pyrene TEQ	3	4	3	**40**
Organochlorine Pesticides				
DDT+DDD+DDE	240	600	400	**3,600**
Aldrin + Dieldrin	6	10	10	**45**
Chlordane	50	90	70	**530**
Endosulfan	270	400	340	**2000**
Endrin	10	20	20	**100**
Heptachlor	6	10	10	**50**
HCB	10	15	10	**80**
Other (NEPM 2013)				
Phenol	3000	45,000	40,000	**240,000**
PCBs	1	1	1	**7**

6.2 Soil Investigation Levels For Vapour Intrusion (SIL)

National Environment Protection (Assessment of Site Contamination) Measure (NEPM) – Schedule B1 (1999 amended 2013).] : Soil Investigation Levels for vapour intrusion (mg/kg).

- Table 1A(3) – NEPM 2013

	Commercial / Industrial - HSL D			
Chemical	0 m to <1 m	1 m to <2 m	2 m to <4 m	4 m +
SAND				
Toluene	NL	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	230	NL	NL	NL
Naphthalene	NL	NL	NL	NL
Benzene	3	3	3	3
F1	260	370	630	NL
F2	NL	NL	NL	NL
SILT				
Toluene	NL	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	NL	NL	NL	NL
Naphthalene	NL	NL	NL	NL
Benzene	4	4	6	10
F1	250	360	590	NL
F2	NL	NL	NL	NL
CLAY				
Toluene	NL	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	NL	NL	NL	NL
Naphthalene	NL	NL	NL	NL
Benzene	4	6	9	20
F1	310	480	NL	NL
F2	NL	NL	NL	NL

F1 – To obtain F1 subtract the sum of BTEX concentration from the C6-C10 fraction.
F2 – To obtain F2 subtract naphthalene from the >C10-C16 fraction

6.3 Site Specific - Ecological Investigation Levels (EILs)

Levels have been derived for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems (NEPM, 2013). EILs depend on specific soil physiochemical properties and land use scenarios and generally apply to the top 2 m of soil, which corresponds to the root zone and habitation zone of many species. The EIL is determined for a contaminant based on the sum of the ambient background concentration (ABC) and an added contaminant limit (ACL). The ABC of a contaminant is the soil concentration in a specific locality that is the sum of naturally occurring background levels and the contaminants levels that have been introduced from diffuse or non-point sources (e.g. motor vehicle emissions). The ACL is the added concentration (above the ABC) of a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required.

The EIL is calculated using the formula : EIL = ABC + ACL.

The adopted EIL, derived from *Schedule B1 of NEPM (2013)* and the Excel Spreadsheet – *eil-calculation-spreadsheet-December-2010(1)* are shown below. The following site specific data and assumptions have been used to determine the EILs:

- a protection level of 80%.
- the EILs will apply to the top 2 m.
- considering the historical site use/fill, the contamination is considered as “aged” (>2 years);

ABCs have been derived using the Interactive (Excel) Calculation Spreadsheet using input parameters of NSW and for high for traffic volumes.

Site specific pH values have been used to calculate the input parameter for the Interactive (Excel) Calculation Spreadsheet. The average pH value for filling samples was used, being a pH of 7.1 (based on measured pH values between 5.1 and 8.0);

Analytical Parameters:

pH – average	8.1
Cation Exchange Capacity (CEC) – meq/100g (estimated)	2.7
Clays in Soil %	Varying Est. 10%

An estimated clay content value of 30% has been used as input parameters in the Interactive (Excel) Calculation Spreadsheet considering the fill soil is generally comprised of mixed clayey sands.

The above CEC value of 11 and the average pH of 7.1 has been used for the input parameters in the Excel Spreadsheet – *eil-calculation-spreadsheet-December-2010(1)*.

Table 9

Derived Ecological Investigation Levels (EIL) in mg/kg for Commercial / Industrial		
METALS		
	FRESH	AGED
Arsenic	80	160
Copper	60	90
Nickel	30	20
Chromium III	340	670
Lead	440	1800
Zinc	120	300
PAH		
Naphthalene	370	370
OCP		
DDT	640	640

6.4 Generic - Ecological Screening Levels (ESLs)

NEPM 2013 – B(1): Table 1B(6) ESLs for TPH fractions F1 - F4, BTEX and benzo(a)pyrene in soil

CHEMICAL	Soil texture	ESLs (mg/kg dry soil)		
		Areas of ecological significance	Urban residential and public open space	**Commercial and industrial**
F1 C_6-C_{10}	*Coarse/ Fine*	125*	180*	**215***
F2 >C_{10}-C_{16}	*Coarse/ Fine*	25*	120*	**170***
F3 >C_{16}-C_{34}	*Coarse*	-	300	**1700**
	Fine	-	1300	**2500**
F4 >C_{34}-C_{40}	*Coarse*	-	2800	**3300**
	Fine	-	5600	**6600**
Benzene	*Coarse*	10	50	**75**
	Fine	10	65	**95**
Toluene	*Coarse*	10	85	**135**
	Fine	65	105	**135**
Ethylbenzene	*Coarse*	1.5	70	**165**
	Fine	40	125	**185**
Xylenes	*Coarse*	10	105	**180**
	Fine	1.6	45	**95**
Benzo(a)pyrene	*Coarse*	0.7	0.7	**0.7**
	Fine	0.7	0.7	**0.7**

Notes:

(1) ESLs are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability.
(2) '-' indicates that insufficient data was available to derive a value.
(3) To obtain F1, subtract the sum of BTEX concentrations from C_6-C_{10} fraction and subtract naphthalene from >C_{10}-C_{16} to obtain F2.

6.5 Generic – Management Limits : Petroleum Hydrocarbons

NEPM 2013 – B(1): Table 1 B(7) Management Limits for TRH fractions F1-F4 in soil

TPH fraction	Soil texture	Management Limits[1] (mg/kg dry soil)	
		Residential, parkland and public open space	Commercial and industrial
F1[2] C6- C10	*Coarse*	700	**700**
	Fine	800	**800**
F2[2] >C10-C16	*Coarse*	1000	**1000**
	Fine	1000	**1000**
F3 >C16-C34	*Coarse*	2500	**3500**
	Fine	3500	**5000**
F4 >C34-C40	*Coarse*	10 000	**10 000**
	Fine	10 000	**10 000**

[1] Management limits are applied after consideration of relevant ESLs and HSLs

[2] Separate management limits for BTEX and naphthalene are not available hence these should not be subtracted from the relevant fractions to obtain F1 and F2.

6.6 Groundwater Investigation Levels (GILs)

Substance		Groundwater Investigation Levels		
		Fresh Waters[A]	Marine Waters[A]	Drinking Water[B]
		(µg/L)	(µg/L)	(mg/L)
Metals and Metalloids				
Aluminum, Al pH>6.5		55	-	-
Antimony		-	-	0.003
Arsenic		24 as As(III) 13 as As(V)	-	0.01
Barium		-	-	2
Beryllium		-	-	0.06
Boron		370[C]	-	4
Cadmium	H	0.2	0.7[D]	0.002
Chromium, Cr (III)	H	-	27	-
Chromium, Cr (VI)		1[C]	4.4	0.05
Cobalt		-	1	-
Copper	H	1.4	1.3	2
Iron, (Total)		-	-	-
Lead	H	3.4	4.4	0.01
Manganese		1900[C]	-	0.5
Mercury (Total)		0.06[D]	0.1[D]	0.001
Molybdenum		-	-	0.05
Nickel	H	11	7	0.02
Selenium (Total)		5[D]	-	0.01
Silver		0.05	1.4	0.1
Tributyl tin (as Sn)		-	0.006[C]	-
Tributyl tin oxide		-	-	0.001
Uranium		-	-	0.017
Vanadium		-	100	-
Zinc	H	8[C]	15[C]	-
Monocyclic Aromatic Hydrocarbons				
Benzene		950	500[C]	0.001
Toluene		-	-	0.8
Ethylbenzene		-	-	0.3
Xylene		350-o & 200-p	-	0.6
Styrene (Vinyl benzene)		-	-	0.03

Polycyclic Aromatic Hydrocarbons (PAHs)			
Naphthalene	16	50[C]	-
Benzo[a]pyrene	-	-	0.00001
Phenols			
Phenol	320	400	-
2-Chlorophenol	340[C]	-	0.3
4-Chlorophenol	220	-	-
2,4-Dichlorophenol	120	-	0.2
2,4,6-Trichlorophenol	3[D]	-	0.02
2,3,4,6-Tetrachlorophenol	10[D]	-	-
Pentachlorophenol	3.6[D]	11[D]	0.01
2,4-Dinitrophenol	45	-	-

6.7 Groundwater HSLs for vapour intrusion (mg/L)

NEPM 2013 - Table 1A(4)
NOTE: Laboratory results ug/L (micrograms) – Criteria below are in mg/L

	HSL A & HSL B Low - high density residential			HSL C Recreational / Open space			HSL D Commercial / industrial			
CHEMICAL	**2 m to <4 m**	**4 m to <8 m**	**8 m+**	**2 m to <4 m**	**4 m to <8 m**	**8 m+**	**2 m to <4 m**	**4 m to <8 m**	**8 m+**	**Solubility limit**
SAND										
Toluene	NL	NL	NL	NL	NL	NL	NL	NL	NL	61
Ethylbenzene	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.9
Xylenes	NL	NL	NL	NL	NL	NL	NL	NL	NL	21
Naphthalene	NL	NL	NL	NL	NL	NL	NL	NL	NL	0.17
Benzene	0.8	0.8	0.9	NL	NL	NL	5	5	5	59
F1(7)	1	1	1	NL	NL	NL	6	6	7	9.0
F2(8)	1	1	1	NL	NL	NL	NL	NL	NL	3.0
SILT										
Toluene	NL	NL	NL	NL	NL	NL	NL	NL	NL	61
Ethylbenzene	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.9
Xylenes	NL	NL	NL	NL	NL	NL	NL	NL	NL	21
Naphthalene	NL	NL	NL	NL	NL	NL	NL	NL	NL	0.17
Benzene	4	5	5	NL	NL	NL	30	30	30	59
F1(7)	6	6	6	NL	NL	NL	NL	NL	NL	9.0
F2(8)	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.0
CLAY										
Toluene	NL	NL	NL	NL	NL	NL	NL	NL	NL	61
Ethylbenzene	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.9
Xylenes	NL	NL	NL	NL	NL	NL	NL	NL	NL	21
Naphthalene	NL	NL	NL	NL	NL	NL	NL	NL	NL	0.17
Benzene	5	5	5	NL	NL	NL	30	30	35	59
F1(7)	NL	NL	NL	NL	NL	NL	NL	NL	NL	9.0
F2(8)	NL	NL	NL	NL	NL	NL	NL	NL	NL	3.0

6.8 Aesthetics

In addition to the above, the NEPM 2013 guidelines address the issue of aesthetic considerations in relation to non-hazardous inert foreign material (refuse) in soil or fill resulting from human activities. The guidelines permit the presence of foreign matter within the fill to be retained within the site subject to compliance of the fill material to the Site Criteria and aesthetically acceptable (eg malodorous soils, discoloured chemical deposits, stained soil, large monolithic deposits/large inert foreign matter, putrescible refuse and animal remains).

In addition to the above criteria, considerations should be given to odour (eg hydrocarbon and solvents) where adoption of lower threshold criteria may be required if it causes significant nuisance.

SECTION 7 : SOIL - LABORATORY ANALYSIS RESULTS

All soil sample laboratory results were taken into consideration to fulfill the requirements for a Stage 2 Detailed Site Investigation. See *Appendix B : Summary of Results and Appendix D: Envirolab Rpt 372678 (Syd) and MGB0249 (Melb).*

7.1 Metals

7.1.1 Metals - Health Investigation Levels (HILs)

Sixteen (16) primary soil samples and two (2) QA/QA samples (intra & inter lab duplicate) were analysed for metals x8. Most metal (x8) results were generally above detection levels but did not exceed the Health Investigation Levels for *Commercial / Industrial (HIL D).*

7.1.2 Metals – Derived Ecological Investigation Levels (EILs)

Levels have been derived for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems (NEPM, 2013). EILs depend on specific soil physiochemical properties and land use scenarios and generally apply to the top 2 m of soil, which corresponds to the root zone and habitation zone of many species.

The EILs are calculated using the Cation Exchange Capacity (CEC) and acidity (pH) of the soil/sand/medium. It should be noted that the medium is loose sand and the CEC laboratory result for BH03 was 2.7 meg/100g. This is very low due to the high sand content and accordingly the calculated EILs for the metals (criteria) shall also be low (Note: The aged EIL for copper and zinc are low at 90 and 300 mg/kg).

- *Cation exchange capacity (CEC) is a soil chemical property. It is the ability of the soil to hold or store cations. When soil particles are negatively charged they attract and hold on to cations (positively charged ions) stopping them from being leached down the soil profile. The cations held by the soil particles are called exchangeable cations. On the other hand, negatively charged soil particles repel anions (negatively charged ions). The implication of this is that negatively charged nutrients such as nitrates, sulphate and chlorides are vulnerable* to leaching down the soil profile.

A number metal (x8) analysis results did exceed the 'aged' *Derived Ecological Investigation Levels* (EIL) for copper and zinc (in mg/kg) for commercial / industrial, as calculated in Section 6.2. See table below – exceedance in 'bold'.

		Copper	Zinc
	NEPM - EIL (aged)	**90**	**300**
Sample / Borehole ID			
04001/BH03/0.1		230	570
04001/IntraDup (BH03/0.1)		660	340
04001/BH05/0.1		120	1,200

The samples above (ie: >EILs) were taken from loose fill material directly under the old residence (now burger café). The whole site shall be excavated as part of the basement construction. It is suspected that the shallow fill material shall be removed as part of the remediation measures dealing with the asbestos cement fragment located in BH01.

7.2 Petroleum Hydrocarbons (TRH & BTEX)

Sixteen (16) primary soil samples were analysed for TRH & BTEX. All results were below detection levels and as such did not exceed the *Ecological Screening Levels* (ESLs), the *Soil Investigation Levels For Vapour Intrusion* (SILs) criteria or the *Management Limits for Petroleum Hydrocarbons.*

7.3 Polyaromatic Hydrocarbons (PAH)

Sixteen (16) primary soil samples were analysed for PAH. Some Benzo-a-pyrene TEQ and total PAH levels were above detection levels, however all samples did not exceed the Health Investigation Levels for *Commercial / Industrial (HIL D)* and *Ecological Investigation Levels* (EILs) or *Soil Investigation Levels For Vapour Intrusion* (SILs) criteria.

Note: Maximum benzo(a)pyrene TEQ level of 1.7 mg/kg (sample 04001/BH2/0.1) was well below the Commercial/Industrial guideline of 40 mg/kg.

7.4 Organochlorine Pesticides (OCPs)

One soil sample (taken from under former residence) was analysed for OCPs. The OCPs analysis results were below detection levels, and as such results did not exceed the *Commercial / Industrial (HIL D)* and *Ecological Investigation Levels* (EILs for DDT) criteria.

7.5 Polychlorinated Biphenyls (PCBs)

One soil sample (taken from under former residence) was analysed for PCBs. The PCBs analysis results were below detection levels, and as such results did not exceed the *Commercial / Industrial (HIL D)* criteria.

7.6 Volatile Organic Compounds (VOCs)

Three soil samples were analysed for VOCs. The VOCs analysis results were below detection levels.

7.7 Acidity (pH)

The average pH level from eight sampling points was 8.1 pH Units. The soil is regarded as generally neutral acidity.

7.8 Asbestos ID in Soils

Seven samples of soil were analysed for asbestos fibre content. No asbestos detected at reporting limit of 0.1 g/kg. No respirable fibres detected.

7.9 Asbestos ID in Material

One fragment of asbestos cement fibreboard was located within the fill material (depth 0.2 m) of BH01. The fragment was analysed for asbestos content. The fragment contained chrysotile and crocidolite asbestos.

7.9 Photo-ionisation Detector (PID)

A PID was used to assess the soil for volatile compounds. Headspace screening of soil samples for VOCs using a portable photo ionisation detector (PID) was undertaken. A duplicate of the sample was taken, (jar half fill with soil) and then covered with aluminium foil. The PID nozzle was then inserted through the foil and the VOCs measured. Any headspace VOC concentrations exceeding 30ppm was noted and the sample analysed for VOCs. All PID readings were less than the 30ppm action level. The PID readings are tabled in Section 5.3.

SECTION 8: GROUNDWATER – LABORATORY ANALYSIS RESULTS

8.1 Groundwater Well Sampling Procedure

Three groundwater wells were also sampled including 2 QA/QC samples. The wells were previously installed as part of investigations of the hydrocarbon plume originating from the service station located across the street (The Strand).

The wells were placed along the footpath adjacent to the Site. WSP Pty Ltd conducted most of the investigations and multi-Phase Extraction events from 2017 to 2019. It is suspected that WSP installed the three monitoring wells, identified as MW06, MW07 and MW09, during these investigation and remediation procedures.

The wells are identified within this investigation as GW01 (MW06), GW02 (MW07) and GW03 (MW09).

On inspection, the three wells were sealed and in good condition. The wells were bailed using individual disposable bailers on 7 February 2025 (4 days before sampling using a peristaltic pump sampling unit). The water was relatively clear with no odour.

Water Quality Data was also analysed (GW03):

Miscellaneous Inorganics	
Turbidity	110 (NTU)
Nitrate as N in water	6.8 mg/L
Ammonia as N in water	0.057 mg/L
Total Nitrogen in water	6.8 mg/L
Total Suspended Solids	120 mg/L
Metals in Waters	
Total Phosphorus	<0.05 mg/L

8.2 Groundwater Well #1 – Analysis Results and Field Parameters

GROUNDWATER WELL #1			
Groundwater Depth (metres)	**3.08 (TOC)**	**Parameters (stabilised reading)**	
Pump on time	**8.18 am**	**Electrical Conductivity (mS/cm**	**365**
Pump off time	**9.06 am**	**pH**	**5.81**
Notes	**-**	**Dissolved Oxygen (DO) mg/L**	**120.1**
		Redox (m/V)	**175.7**
		Temperature	**23.5**

Metals – Groundwater Investigation Levels (GILs)								
Sample	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
04001/GW01(ug/L)	<1	<0.1	<1	<1	<1	<0.05	1	**100**
GIL - Marine Waters (except where noted) ug/L	**-**	**0.7**	**Cr3 – 27 Cr6 – 4.4**	**1.3**	**4.4**	**0.1**	**7**	**15**
GIL - Fresh Waters (except where noted) ug/L	**As3 – 24* As5 – 13***	**0.2**	**Cr6 – 1**	**1.4**	**3.4**	**0.06**	**11**	**8**

Hydrocarbons – Groundwater Investigation Levels (GILs)								
Sample	B	T	E	X	Napth	B(a)P	TRH F1	TRH F2
04001/GW01 (ug/L)	<1	<1	<1	<3	<1	<0.1	<10	140
GIL - Marine Waters (except where noted) ug/L	**500**	**-**	**-**	**-**	**50**	**-**	**-**	**-**
GIL - Fresh Waters (except where noted) ug/L	**950**	**-**		**350 o-xyl 200 p-xyl**	**16**	**-**	**-**	**-**

Hydrocarbon Groundwater HSLs for SAND for vapour intrusion - Table 1A(4) NEPM B1 (2m-4m)								
Sample	B	T	E	X	Napth	B(a)P	TRH F1	TRH F2
04001/GW01 (ug/L)	<1	<1	<1	<3	<1	<0.1	<10	140
Table 1A(4) NEPM B1 ug/L Commercial/Indust	**5000**	**-**	**-**	**-**	**-**	**-**	**6000**	**-**
Table 1A(4) NEPM B1 ug/L Residential	**800**	**-**	**-**	**-**	**-**	**-**	**1000**	**1000**

03008/GW01 - VOCs Not Detected
03008/GW01 - PAHs Not Detected

* Fresh Waters
** Drinking Waters

8.3 Groundwater Well #2 – Analysis Results and Field Parameters

GROUNDWATER WELL #2			
Groundwater Depth (metres)	**2.91 (TOC)**	**Parameters (stabilised reading)**	
Pump on time	**11.03 am**	**Electrical Conductivity (mS/cm**	**287**
Pump off time	**11.46 am**	**pH**	**4.84**
Notes	**-**	**Dissolved Oxygen (DO) mg/L**	**118.2**
		Redox (m/V)	**254.0**
		Temperature	**24.5**

Metals – Groundwater Investigation Levels (GILs)								
Sample	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
04001/GW02(ug/L)	<1	<0.1	<1	<1	<1	<0.05	1	5
GIL - Marine Waters (except where noted) ug/L	**-**	**0.7**	**Cr3 – 27 Cr6 – 4.4**	**1.3**	**4.4**	**0.1**	**7**	**15**
GIL - Fresh Waters (except where noted) ug/L	**As3 – 24* As5 – 13***	**0.2**	**Cr6 – 1**	**1.4**	**3.4**	**0.06**	**11**	**8**

Hydrocarbons – Groundwater Investigation Levels (GILs)								
Sample	B	T	E	X	Napth	B(a)P	TRH F1	TRH F2
04001/GW02 (ug/L)	<1	<1	<1	<3	<1	<0.1	<10	<50
GIL - Marine Waters (except where noted) ug/L	**500**	**-**	**-**	**-**	**50**	**-**	**-**	**-**
GIL - Fresh Waters (except where noted) ug/L	**950**	**-**		**350 o-xyl 200 p-xyl**	**16**	**-**	**-**	**-**

Hydrocarbon Groundwater HSLs for SAND for vapour intrusion - Table 1A(4) NEPM B1 (2m-4m)								
Sample	B	T	E	X	Napth	B(a)P	TRH F1	TRH F2
04001/GW02 (ug/L)	<1	<1	<1	<3	<1	<0.1	<10	<50
Table 1A(4) NEPM B1 ug/L Commercial/Indust	**5000**	**-**	**-**	**-**	**-**	**-**	**6000**	**-**
Table 1A(4) NEPM B1 ug/L Residential	**800**	**-**	**-**	**-**	**-**	**-**	**1000**	**1000**

03008/GW02 - VOCs Not Detected
03008/GW02 - PAHs Not Detected

* Fresh Waters
** Drinking Waters

8.3 Groundwater Well #3 – Analysis Results and Field Parameters

GROUNDWATER WELL #3			
Groundwater Depth (metres)	**2.53 (TOC)**	**Parameters (stabilised reading)**	
Pump on time	**10.03 am**	**Electrical Conductivity (mS/cm**	**306.7**
Pump off time	**10.50 am**	**pH**	**4.41**
Notes	**-**	**Dissolved Oxygen (DO) mg/L**	**119.2**
		Redox (m/V)	**253.1**
		Temperature	**25.0**

Metals – Groundwater Investigation Levels (GILs)								
Sample	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn
04001/GW03 (ug/L)	<1	<0.1	<1	<1	<1	<0.05	2	**21**
GIL - Marine Waters (except where noted) ug/L	**-**	**0.7**	**Cr3 – 27 Cr6 – 4.4**	**1.3**	**4.4**	**0.1**	**7**	**15**
GIL - Fresh Waters (except where noted) ug/L	**As3 – 24* As5 – 13***	**0.2**	**Cr6 – 1**	**1.4**	**3.4**	**0.06**	**11**	**8**

Hydrocarbons – Groundwater Investigation Levels (GILs)								
Sample	B	T	E	X	Napth	B(a)P	TRH F1	TRH F2
04001/GW03 (ug/L)	<1	<1	<1	<3	<1	<0.1	<10	66
GIL - Marine Waters (except where noted) ug/L	**500**	**-**	**-**	**-**	**50**	**-**	**-**	**-**
GIL - Fresh Waters (except where noted) ug/L	**950**	**-**		**350 o-xyl 200 p-xyl**	**16**	**-**	**-**	**-**

Hydrocarbon Groundwater HSLs for SAND for vapour intrusion - Table 1A(4) NEPM B1 (2m-4m)								
Sample	B	T	E	X	Napth	B(a)P	TRH F1	TRH F2
04001/GW03 (ug/L)	<1	<1	<1	<3	<1	<0.1	<10	66
Table 1A(4) NEPM B1 ug/L Commercial/Indust	**5000**	**-**	**-**	**-**	**-**	**-**	**6000**	**-**
Table 1A(4) NEPM B1 ug/L Residential	**800**	**-**	**-**	**-**	**-**	**-**	**1000**	**1000**

03008/GW03 - VOCs Not Detected
03008/GW03 - PAHs Not Detected

* Fresh Waters
** Drinking Waters

SECTION 9: UPDATED CONCEPTUAL SITE MODEL

9.1 Potential Receptors

The site inspection revealed a number of potential receptors for off-site migration of potential contamination:

- Adjacent residential properties (houses and apartments).
- Dee Why beach (ocean) – 150 metres to the northeast.

9.2 Potential Areas of Environmental Concern (PAECs)

POTENTIAL CONTAMINATION SOURCE	CONTAMINATING ACTIVITY	CONTAMINANTS OF CONCERN	PAEC LIKELIHOOD
On site: commercial activities – café restaurants	Oils etc	Hydrocarbons	Unlikely
Post Investigation Update: Hydrocarbon (total petroleum hydrocarbons) were not identified during the investigation within the soil samples.			
Historical commercial activity. A laundry business was located on the corner of Pacific Parade & The Strand (described as 'coin operated laundry') 1975 to around 2010.	Use of dry cleaning fluids / leakage / unknown disposal	Chlorinated hydrocarbons, volatile organic compounds.	Unlikely – the business was a coin operated laundry - not a 'dry cleaners'.
Post Investigation Update: Volatile Organic Compounds (VOCs) were not identified within the three soil samples or within the groundwater taken from the three bores along The Strand.			
Service station located across the road, 148 Pacific Parade. Located on site from around 1971 to present day. Listed on EPA NSW contaminated list.	Petroleum products held in USTs, workshop oils etc – confirmed leakage (since remediated) but remnants of 'plume' still possible.	Heavy metals, Hydrocarbons TRH+BTEXN, VOC,	Possible soil impact and needs investigation. Note: 4 groundwater monitoring wells located on The Strand footpath adjoining property.
Post Investigation Update: Heavy metals (metalsx8), BTEXN and Volatile Organic Compounds (VOCs) were not identified within the soil samples or within the groundwater taken from the three bores along The Strand. Hydrocarbons (F2 : C10-C36) were detected in GW01 and GW03 samples. The levels were marginally above detection but well below the guidelines.			

POTENTIAL CONTAMINATION SOURCE	CONTAMINATING ACTIVITY	CONTAMINANTS OF CONCERN	PAEC LIKELIHOOD
Subsurface fill with building debris (past demolition)	Identified during geotechnical investigations	PAH, Heavy metals, asbestos	Possible - Not likely in any substantial quantity but needs to be investigated
Post Investigation Update: A fragment of asbestos cement fibreboard was identified in shallow subsoil in the BH01. Fill located in all boreholes at varying depths between 0.2 – 0.8 metres.			

9.3 Risk of Potentially Affected Media (PCM)

The potentially contaminated media on site are:

- Risk of hydrocarbon contamination from service station across road (listed on EPA contaminated sites database). The site is not considered to be down gradient to the source of contamination (old fuel tanks). However it could be considered to be adjacent to the northeast direction of the groundwater flow. The soil is sandy and porous – lateral movement of the hydrocarbon plume could have been (and possibly could be) possible. Heavy metals (metalsx8), BTEXN and Volatile Organic Compounds (VOCs) were not identified within the soil samples or within the groundwater taken from the three bores along The Strand. Hydrocarbons (F2 : C10-C36) were detected in GW01 and GW03 samples. The levels were marginally above detection but well below the guidelines. **LOW Risk.**
- Soil/Fill material – under concrete slab/s of building and within rear yard. Potential for fill to be imported to site (presently unknown) – Asbestos cement fragment identified within the shallow fill of BH01.
- Groundwater –considering groundwater direction. Four groundwater wells are located on the footpath adjoining the property (MW06, 7, 8 & 9). Hydrocarbon levels were detected (see below) - Hydrocarbons (F2 : C10-C16) were detected in GW01 and GW03 samples. The levels were marginally above detection but well below the guidelines. **LOW** Risk (considering very low levels).
- **Important Note**: Elevated levels of ethylbenzene and xylenes detected in MW09 in 2017 and F1 (C6-C10) and F2 (C10-C16) hydrocarbons in MW06 in 2014. Odour levels affecting the property but below criteria still a possibility. See Appendix B – UPSS Monitoring Q3 2017 – WSP.

9.4 Potential Exposure Pathways

PATHWAY	CONTAMINANTS	POTENTIAL RISK / LIKELIHOOD
Airborne contaminant particles	Heavy metals, volatile components, asbestos	Update: Low levels of metals and hydrocarbons detected. Low risk from asbestos cement fragment located in BH01 surficial fill.
Dermal contact	Heavy metals, hydrocarbons, asbestos etc	Unlikely for onsite construction workers
Airborne vapours	Volatile contaminants, hydrocarbons	Possible onsite occupants via sub floor soil vapour accumulation within proposed development basement. Low levels of F2 (C10-C16) detected in two groundwater samples well below the guidelines. Soil Vapour Assessment shall be recommended upon demolition.

9.5 Human and Ecological Receptors

TYPE	RECEPTORS	LIKELIHOOD
HUMAN	Current and future occupants and landholders	Sub floor vapour accumulation and intrusion with planned basements. Low levels of F2 (C10-C16) detected in two groundwater samples well below the guidelines. Soil Vapour Assessment shall be recommended upon demolition.
	Construction and maintenance workers particularly involved in potential excavation works	Sub floor vapour accumulation and intrusion with planned basements. Low levels of F2 (C10-C16) detected in two groundwater samples well below the guidelines. Soil Vapour Assessment shall be recommended upon demolition.
	Adjoining residential and commercial properties	Off-site contamination originating from the Site not considered an issue.
ECO-LOGICAL	Pacific Ocean – 150 metres to northeast	Unlikely - Identified asbestos cement fragment and low level oils not considered a risk.
	Adjacent residential properties	Unlikely - Identified asbestos cement fragment and low level oils not considered a risk.
	Adjacent gardens, trees and scrubs	Unlikely - Identified asbestos cement fragment and low level oils not considered a risk.

9.6 Assessment of Data Gaps

DATA GAPS	COMMENTS
Status of the soil with respect to on-site contaminating activities	Asbestos cement fragment located in surficial fill of BH01
Status of the soil with respect to adjacent contaminating activities	EPA listed contaminated site (service station) approx. 15 metres west of site. Low levels of F2 (C10-C16) detected in two groundwater samples well below the guidelines. Soil Vapour Assessment shall be recommended upon demolition.
Status of subsurface with respect to potential vapour intrusion	At present unknown. EPA listed contaminated site (service station) approx. 15 metres west of site. Low levels of F2 (C10-C16) detected in two groundwater samples well below the guidelines. Soil Vapour Assessment shall be recommended upon demolition.
Status of groundwater with respect to on site or offsite contaminating activities	Elevated levels of ethylbenzene and xylenes detected in MW09 in 2017, and F1 (C6-C10) and F2 (C10-C16) hydrocarbons in MW06 in 2014. No odour detected. Low levels of F2 (C10-C16) detected in two groundwater samples well below the guidelines. Soil Vapour Assessment shall be recommended upon demolition.

SECTION 10: DISCUSSION AND RECOMMENDATIONS

10.1 Discussion

10.1.1 Soil - DSI Sampling & Analysis

- The seven-step DQO process (defined in Section 4) as outlined in the *NEPM 2013* was employed to assess the property in regard to contamination of the soil.
- The area of the lot is 550 square metres. As such according to *EPA NSW Sampling design part 1 – application* (Aug 2022) a minimum of 8 sampling points is required to characterise the site (based on a 95% confidence to detect a hot spot of 9.3 - 13.2 metre circumference for a site of between 500 and 1,000 sqm). One sample was taken of the fill layer (0.1 – 0.5 m) and one from the deeper substratum (~1.0 – 3.0 m) where possible. Deeper samples were taken from two borehole >2.0 metres.
- The detailed site investigation was undertaken using a mechanical augur and hand equipment. Fifteen (16) primary samples were collected. Five (5) QA/QC samples were also analysed.
- The soil sample laboratory analysis results were assessed against the relevant *guidelines* listed in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)* May 2013.
- All soil samples were analysed for 'contaminants of concern' by Envirolab Services in Chatswood (NATA accredited laboratory).
- The soil sample laboratory analysis results confirm that heavy metals (x8), PAH, TRH, BTEX, OCPs and PCBs analysis results did not exceed the *HIL D Commercial / Industrial* criteria, the ESLs, the EILs and management criteria (hydrocarbons) in accordance with the *NEPM 2013*. (ie: See Section 7).
- All VOC analysis results were below detection levels.
- The metals copper and zinc analysis results did exceed the *aged EILs* (Ecological Investigation Levels) within shall fill samples of two boreholes. Levels have been derived for selected metals and organic compounds and are applicable for assessing risk to terrestrial ecosystems). This fill shall be removed (possibly as part of remediation to deal with asbestos cement fragment/s) but principally as part of a two basement level excavation. As the shallow fill material shall be removed it is considered that the exceedance above the Ecological Investigation Levels shall not be an issue.

- A PID reading to assess volatile content was taken of a duplicate of the primary samples. The PID readings did not exceed the action level of 30ppm (No reading exceeded 2.5 ppm – see table in Section 5.3).
- Asbestos fibres and/or fines were not detected in the analysed samples at reporting limit of 0.1 g/kg. No respirable fibres detected.
- A fragment of fibreboard was located within the surficial fill (depth 0.25m) of BH01. This borehole is located within the 'pebble landscaped' area between the two cafes (centre of the property). The fragment on analysis contained chrysotile and crocidolite asbestos.
- Suspected natural sands and silts were identified in all boreholes beneath the shallow upper fill sands.

10.1.2 Groundwater - DSI Sampling & Analysis

- The seven-step DQO process (defined in Section 4) as outlined in the *NEPM 2013* was employed to assess the property in regard to groundwater contamination.
- Three established groundwater wells located along The Strand were sampled. These wells were originally established as part of the groundwater investigation monitoring / sampling of the UPSS leak of the adjacent service station. The wells were originally identified in these reports as MW06, MW07 and MW09. The wells were renamed as MW01, GW02 and GW03 (respectively) for this investigation. A summary of the reports undertaken by WSP is provided in Appendix E.
- All three wells were sealed and in good condition. The wells were bailed using individual disposable bailers on 7 February 2025 4 days before sampling. The water was relatively clear with no odour.
- The groundwater wells were located adjacent to the north/south 'down-gradient' direction (with respect to groundwater).
- On 11 February 2025, 3 groundwater wells including 2 duplicate QA/QC samples. were sampled using a peristaltic pump sampling unit.
- All groundwater samples were analysed for 'contaminants of concern' by Envirolab Services in Chatswood (NATA accredited laboratory) and the results assessed against the relevant *guidelines* listed in the *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)* May 2013.

- The groundwater sample laboratory analysis results confirm that the metals (x8), BTEX, PAHs and VOC analysis results were all below detection, and as such did not exceed the *Groundwater Investigation Levels (GILs*) and *Groundwater HSLs for Vapour Intrusion* in accordance with the *NEPM 2013*. (ie: See Section 7).
- Historical Setting: UPSS Monitoring of Adjacent Service Station (Rpt WSP 2017) :
    - Elevated levels of BTEX (benzene >criteria) and F1 (C6-C10) and F2 (C10-C16) hydrocarbons detected in MW09 (GW03) in 2017
    - Elevated levels of F1 (C6-C10) (>criteria) and F2 (C10-C16) hydrocarbons in MW06 (GW01) in 2014. See Appendix E.
- Low level elevation of F2 (C10-C16) was detected in the two groundwater samples taken from GW01 (F2 – 140 ug/L) and GW03 (66 ug/L). Both these were above detection levels though well below the NEPM criteria for residential of 1000 ug/L.
- The detected low hydrocarbon results shall not affect the recommendation that the site is suitable for the proposed development. However, considering the historical setting (past investigations), it shall be deemed prudent to undertake a Soil Vapour Assessment upon demolition, to provide design guidance in the event of sub-basement vapour accumulation risk.

10.1.3 Database and Historical Details

Points taken into consideration to enable recommendations:

- The matters as prescribed by Section 59(2) of the Contaminated Lands Management Act 1997 (documented in the Planning Certificate 10.7) do not indicate that the land is contaminated, or under any orders or notices issued by the EPA NSW.
- The NSW Environment Protection Authority (EPA) is undertaking an investigation program to assess the legacy of per- and poly- fluoroalkyl substances (PFAS) use across NSW. The site is not part of the PFAS investigation program.
- The Site is not located within an Acid Sulfate Soil Zone. It is our opinion that PASS (potential acid sulfate soils) shall not be an issue affecting the development.
- The site is not located within a dryland salinity zone. It is our opinion that salinity shall not be an issue affecting the site.
- The site is not listed on the EPA NSW Contaminated Lands database. However the service station located directly across the street at 148 Pacific Parade was listed:

Declared as significantly contaminated land: Section 11 of the Contaminated Land Management Act 1997 - Declaration No. 20201105; Area No. 3457

- The site has been used for residential and commercial purposes since at least 1943. In the pastas a real estate agent, coin operated laundry and chemist. Two cafés / restaurants are presently located on site. The larger one facing Pacific Parade is suspected to have been the chemist then laundry. Described as 'Dee Why Coin Laundry' in a web search. Dry cleaning facilities not suspected on site in the past.

10.2 Recommendations

10.2.1 Suitability of the Site for the Proposed Development

This report is in accordance with:

- *National Environment Protection (Assessment of Site Contamination) Measure (NEPM)*, (1999 amended 2013);
- *State Environmental Planning Policy (Resilience and Hazards) 2021;*
- EPA NSW *Guidelines for Consultants Reporting on Contaminated Sites* 1997 Reprinted August 2011.

Elevated '*contaminants of concern'* above the nominated criteria that may impact the proposed development, were not identified during this Detailed Site Investigation. It is the opinion of EBG that **the site shall be suitable for the proposed development:**

- *Demolition of an existing buildings and construction of a new development with a mixed use building consisting of two levels of basement parking accessed by a car lift from street level. The ground floor consists of two retail tenancies and a residential lobby leading to 9 sole occupancy units across three split level storeys.*

IMPORTANT NOTE: The above is given with the understanding that the **'recommendations'** below are undertaken:

10.2.2 Recommendation #1: Remedial Action Plan

A Remedial Action Plan shall be prepared to remove the fill/soil impacted with potential asbestos cement fragments identified in the shallow fill of BH01 and possibly other areas to accordance with the *NEPM* 2013, Local Council *State Environmental Planning Policy (Resilience and Hazards) 2021* and *EPA NSW Guidelines for Consultants Reporting on Contaminated Sites (May 2020)* to deal with the areas of environmental concern.

At the conclusion of the remediation, validation sampling of the remaining soil shall be undertaken to confirm that all contaminants have been removed. The design of the validation sampling program shall be undertaken using *National Environment Protection (Assessment of Site Contamination) Measure (NEPM*) – Schedule B1 (1999 amended 2013 and *EPA NSW Sampling design part 1 – application (Aug 2022).*

A validation report shall be prepared following successful removal of contaminated fill and validation of the property.

10.2.3 Recommendation #2 : Sub Floor Vapour (hydrocarbon) Assessment

The detected low hydrocarbon results shall not affect the recommendation that the site is suitable for the proposed development. However, considering the historical setting (past investigations), it shall be deemed prudent to undertake a Soil Vapour Assessment to provide design guidance in the event of sub-basement vapour accumulation risk. Considering the current landuse, this investigation shall be undertaken after demolition of the current buildings.

The sampling points can be drilled directly through the concrete slab of the former building/s or directly into the soil. Semi-permanent sampling points (stainless steel) inserted into the drilled hole, or direct push extensions, shall be used to take the samples. The actual design of the investigation shall be at the discretion of the consultant (CEnvP-SC) and should be undertaken in accordance with *Vapour Intrusion : Technical Practice Note,* DECCW (EPA NSW) Sept 2010.

10.2.4 Recommendation #3: Hazardous Materials Audit on Buildings

It is a requirement of the NSW Occupational Health and Safety Act, 2000 and NSW Occupational Health and Safety Regulation, 2001 that a hazardous materials audit be conducted on any buildings prior to demolition (or major refurbishment). An assessment of the condition of the hazardous materials shall be included, with particular emphasis on the relevant Codes of Practice and WorkCover NSW requirements. The HMA shall report on the identified asbestos materials, synthetic mineral fibre (SMF), PCBs in light fittings, lead content in ceiling space dust and lead content in paintwork. An assessment of the condition of the hazardous materials shall be included, with particular emphasis on the relevant Codes of Practice and WorkCover NSW requirements.

10.2.5 Recommendation #4: General Excavation of Fill / Soil – Waste Classification Requirements

General fill soils removed from the property must first be classified as per the EPA NSW

Waste Classification Guidelines - Part 1 : Classifying Waste (Nov 2014) prior to disposal. The soil sampling regime shall follow EPA NSW Sampling Design Guidelines September 1995. Classification samples of the soil shall be taken by the Environmental Consultant from in situ prior to excavation or from within the stored stockpile as per the requirements below.

10.2.6 Recommendation #5: Imported Soil - VENM

Any imported fill shall be sampled prior to importation and shall conform to VENM (virgin excavated natural material) as per EPA NSW Waste Classification Guidelines - Part 1 : Classifying Waste (Nov 2014).

- **VENM with Documentation:** Backfill material shall be (virgin) excavated natural material (VENM) sourced from a reputable soil / landscaping supplier or excavation contractor. This shall be accompanied by suitable documentation verifying the material is VENM. The documentation shall be provided by a suitably qualified Environmental or Engineering Consultant.
- **VENM without Documentation:** Backfill material without suitable VENM documentation shall be validated using a frequency of one (1) sample for every twenty-five cubic metres ($25m^3$). Each discrete sample analysed shall consist of a composite of these 5 sub-samples collected and mixed in a stainless steel tray. Each sample shall be analysed for the full suite of analytes listed in the EPA Waste Classification Guidelines, Part 1: Classifying Waste (DEC 2014) (Waste Classification Guidelines).

10.2.7 Recommendation #6 : Unexpected Finds Protocol – Unknown Contaminated Soil

If during excavation soil is uncovered that is noticeably stained, has an odour or is suspected to be contaminated outside the known scope (including fragments of fibreboard '*fibro*'), then work should cease in that area. The soil or material should be assessed by an Environmental Geologist/Engineer and sampled for known or possible contaminants. A further report and/or special procedures may have to be undertaken if significant contamination is found on site or by laboratory analysis.

NOTE: Certified Environmental Consultants: *EPA NSW (http://www.epa.nsw.gov.au/your-environment/contaminated-land/managing-contaminated-land/engaging-consultant) - Contaminated land consultant certification schemes have recently been developed to ensure*

those consultants dealing with contaminated sites have the necessary competencies to carry out the work. These certification schemes include:

- *the Environment Institute of Australia and New Zealand's (EIANZ) Contaminated Land Assessment Specialist Certified Environmental Practitioner (CLA Specialist CEnvP) scheme.*
- *the Soil Science Australia (SSA) Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) certification.*

The NSW EPA recognises the CLA Specialist CEnvP and CPSS CSAM certifications as providing a thorough process for certifying contaminated land consultants to an acceptable minimum standard of competency.

SECTION 11: REFERENCES AND LEGISLATION

- *Sydney, Geological Map of NSW, 1:100 000 Geological Series Sheet 9130*, Edition 1, NSW Dept. of Mineral Resources, 1983.
- *Guideline on Investigation Levels for Soil & Groundwater : Schedule B1 – National Environment Protection (Assessment of Site Contamination) Measure (NEPM)*, (1999 amended 2013).
- *EPA NSW Sampling design part 1 – application* (Aug 2022).
- NSW *Contaminated Land Management Act* 2008 No.11.
- *State Environmental Planning Policy (Resilience and Hazards) 2021;*
- *Waste Classification Guidelines (Part 1 : Classifying Waste – Department of Environment & Climate Change NSW (Nov 2014)*
- General approvals of immobilisation' by EPA: '*Ash, ash-contaminated natural excavated materials or coal-contaminated natural excavated materials'.* Approval Number: 1999/05
- *Australian and New Zealand Guidelines from the Protection of Aquatic Organisms – 95% Protection of Species for Fresh and Marine Water* (ANZECC 2000).
- *Virgin excavated natural material (DECC 2008/447)* Fact Sheet 2008.
- *DEC NSW Guidelines for Assessing Former Orchards & Market Gardens* June 2005.
- EPA NSW *Guidelines for Consultants Reporting on Contaminated Sites* 1997 Reprinted August 2011
- *Work Health and Safety Act 2011 (WHS Act)* and *Work Health and Safety Regulation 2011 (WHS Regulation)*.

APPENDIX A: FIGURES / PLANS

- Site Location (Figure No 1: 04001-F01)
- Site Boundaries (Figure No 2: 04001-F02)
- Borehole Locations (Figure No 3: 04001-F03)

LEGEND:

- SITE LOCATION

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FIG NO.	FIGURE NO. 1 : 04001-F01	LOCATION	154-158 PACIFIC PARADE DEE WHY NSW 2099
SOURCE	NEARMAP - IMAGERY 2016 CNES / ASTRIUM, DIGITALGLOBE	CLIENT	HARRINGTON DEE WHY PTY LTD
DRAWN	M.E	PROJECT	STAGE 2 DETAILED SITE INVESTIGATION
APPROVED	M.E	TITLE	SITE LOCATION

LEGEND:

- SITE BOUNDARIES

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FIG NO.	FIGURE NO. 2 : 04001-F02	LOCATION	154-158 PACIFIC PARADE DEE WHY NSW 2099
SOURCE	NEARMAP - IMAGERY 2016 CNES / ASTRIUM, DIGITALGLOBE	CLIENT	HARRINGTON DEE WHY PTY LTD
DRAWN	M.E	PROJECT	STAGE 2 DETAILED SITE INVESTIGATION
APPROVED	M.E	TITLE	SITE BOUNDARIES

LEGEND:

⊗BH0# – BOREHOLE LOCATION

⊙GW0# - GROUNDWATER WELL LOCATION

EBG Environmental Geoscience

FIG NO.	FIGURE NO. 3 : 04001-F03	LOCATION	154-158 PACIFIC PARADE DEE WHY NSW 2099
SOURCE	NEARMAP - IMAGERY 2016 CNES / ASTRIUM, DIGITALGLOBE	CLIENT	HARRINGTON DEE WHY PTY LTD
DRAWN	M.E	PROJECT	STAGE 2 DETAILED SITE INVESTIGATION
APPROVED	M.E	TITLE	BOREHOLE & GROUNDWATER WELL LOCATION

APPENDIX B: DOCUMENTATION

- Summary Of Results
- Calibration Certificates
- Groundwater Site Sheets

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GROUNDWATER SAMPLING SITE SHEET

Sheet No: 1 of 3

Site ID: 154-158 Pacific Pde, Dee Why		GW No: GW01 (MW06)	Date: 11/2/25	Sampler: MC	GW Depth: 3.08 mbgl.
Sampling Device: Low Flow Peristaltic Pump		Pre-purge groundwater depth: 3.08		Post sample depth: 2.01	
Pump on time: 8.10 am	Pump off time: 9.06	Sample ID: 1	Flow Cell: Y / (N)	Notes:	
Field meter calibration	EC: 365	pH: 5.81	DO: 120.1	Redox: 175.7	Temp: 23.5

Field Measurements & Stabilisation Criteria

Time	Purge Rate (mL/min)	Volume purged	Temp	Elect. Conductivity (mS/cm)	pH	Redox (m/V)	Dissolved Oxygen (DO) Mg/L
8.10 am		1	20.8	–	6.6 ?	161.3	119
8.22		2	21.0	–	6.8 ?	163.0	119
8.25		3	23.6	176.8 ?	5.9	171	115
8.26		4	23.6	369	5.75	177	119
8.27		5	23.5	368	5.76	176.7	119
8.35		5.5	23.5	367	5.77	176.2	120.0
8.40		6	23.5	365	5.79	175.6	120.2
8.48		7.0	23.5	365	5.80	175.7	120.2
8.55		8.0	23.5	364	5.8	175.7	120.1
9.06		9.0	23.5				

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GROUNDWATER SAMPLING SITE SHEET

Sheet No: 2 of 3

Site ID: 154-158 Pacific Pde, Dee Why		GW No: GW02(MW07)	Date: 11/2/25	Sampler: ME	GW Depth: 2.910
Sampling Device: Low Flow Peristaltic Pump		Pre-purge groundwater depth: 2.91		Post sample depth:	
Pump on time: 11:23	Pump off time: 12:01	Sample ID: 2	Flow Cell: Y / N	Notes:	
Field meter calibration	EC: 287	pH: 4.84	DO: 118.2	Redox: 254.0	Temp: 24.5

Field Measurements & Stabilisation Criteria

Time	Purge Rate (mL/min)	Volume purged	Temp	Elect. Conductivity (mS/cm)	pH	Redox (m/V)	Dissolved Oxygen (DO) Mg/L
11.23		1	27.3 ?	1.3 } 6	4.9	268.7	121.2
11.28		2	27.2 ?	1.1 }	4.89	277.6	122.7
11.33		3	27.6 ?	1.0 }	4.92	293.4	123.6
11.37		5	24.5	288	5.16	262.0	123.0
11.40		6	24.5	288.6	5.09	261.1	122.0
11.45		7	24.5	286.4	4.98	261.1	119.3
11.50		8	24.5	286	4.91	258.4	118.6
11.56		9	24.4	286.5	4.85	256	118.2
12.01		10	24.5	287.0	4.84	254.1	118.2
12.10		12	24.4	286.5	4.82	254.0	118.1
12.16		13	24.5	287	4.84	254.0	118.2

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Environmental Geoscience

GROUNDWATER SAMPLING SITE SHEET

Sheet No: 3 of 3

Site ID: 154-158 Pacific Pde, Dee Why		GW No: GW03 (MW09)	Date: 11/2/25	Sampler: ME	GW Depth: 2.530 mbgl
Sampling Device: Peristaltic Pump		Pre-purge groundwater depth: 2.530		Post sample depth: 3.110	
Pump on time: 9.55	Pump off time: 11.01	Sample ID: 3	Flow Cell: Y / N	Notes:	
Field meter calibration	EC: 306.7	pH: 4.41	DO: 119.2	Redox: 253.07	Temp: 25.0

Field Measurements & Stabilisation Criteria

Time	Purge Rate (mL/min)	Volume purged	Temp	Elect. Conductivity (mS/cm)	pH	Redox (m/V)	Dissolved Oxygen (DO) Mg/L
9.55		1	22.6	1.1 ?	5.63	259	118.1
10.05		2	22.9	1.0 ?	5.57	271.4	118.1
10.11		3	23.8	0.9 ?	5.58	255	118.6
10.17		4	25.0	151.6	5.58	255.7	117.9
10.21		5	25.0	312.7	4.44	256.3	118.5
10.25		7.6	25.0	309.0	4.44	253	119.0
10.41		10	25.0	306.8	4.42	253.8	119.2
10.50		12.5	25.1	306.7	4.41	253.04	119.2
11.01		14.1	25.0	306.7	4.41	253.07	119.2

PID Calibration Certificate

Instrument **PhoCheck Tiger**
Serial No. **T-119102**

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments			
Battery	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
Switch/keypad	Operation	✓				
Display	Intensity	✓				
	Operation (segments)	✓				
Grill Filter	Condition	✓				
	Seal	✓				
Pump	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
PCB	Condition	✓				
Connectors	Condition	✓				
Sensor	PID	✓	10.6 ev			
Alarms	Beeper	✓	**Low**	**High**	**TWA**	**STEL**
	Settings	✓	50ppm	100ppm	10ppm	25ppm
Software	Version	✓				
Data logger	Operation	✓				
Download	Operation	✓				
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Diffusion mode Aspirated mode

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		95 ppm Isobutylene	NATA	SY622		95.1 ppm

Calibrated by: **Athonis Popotas**

Calibration date: **07/02/2025**

Next calibration due: **09/03/2025**

Multi Parameter Water Meter

Instrument **YSI ProDSS**
Serial No. **20G100631**

airmet
Air-Met Scientific Pty Ltd
1300 137 067

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad	Operation	✓	
Display	Intensity	✓	
	Operation (segments)	✓	
Grill Filter	Condition	✓	
	Seal	✓	
PCB	Condition	✓	
Connectors	Condition	✓	
Sensor	1. pH	✓	
	2. mV	✓	
	3. EC	✓	
	4. D.O	✓	
	5. Temp	✓	
Alarms	Beeper		
	Settings		
Software	Version		
Data logger	Operation		
Download	Operation		
Other tests:			

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Standard Solutions	Certified	Solution Bottle Number	Instrument Reading
1. D.O		0.00%		412773	0.5
2. Conductivity		2760uS		436693	2763
3. pH7		pH 7.00		426181	6.95
4. pH4		pH 4.00		429462	3.9
5. ORP mV		223		A:426086 / B:435258	231.4
6. NTU		100NTU		436042	104.8
7. Temp °C		25		MultiTherm	23.1

Calibrated by: **Nausheen Mazari**

Calibration date: **7-Feb-25**

Next calibration due: **6-Aug-25**

APPENDIX C: BOREHOLE LOGS

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Harrington Dee Why Pty Ltd
Project: Stage 2 Detailed Site Investigation
Location: 154-158 Pacific Pde, Dee Why NSW
Rpt ID: EBG-04001.Stage2.DSI.02.25.R00

Borehole No: 01
Sheet: 1
Date: 11.02.25
Logged By: SM

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Moisture		Observations & Sampling Details
-	0.1		LANDSCASPE PEBBLES		0.1				-	
-	0.2				0.2		PID : 0.1 ppm		-	04001/BH01/0.2
-	0.3				0.3		old topsoil		-	
-	0.4		FILL - clayey sand, f-m grain, dark brown, moist		0.4		Asbestos cement		-	
-	0.5				0.5		fragment at 0.25		-	
-	0.6				0.6				-	
-	0.7				0.7		NO ODOUR		-	04001/BH01/0.7
-	0.8				0.8				-	
-	0.9				0.9				-	
-	**1**		CLAYEY SAND - f-m grain, dark grey, moist		1				-	
-	1.1				1.1				-	
-	1.2				1.2				-	
-	1.3				1.3				-	
-	1.4				1.4				-	
-	1.5				1.5				-	
-	1.6		becoming gey sandy clay		1.6				-	
-	1.7				1.7				-	
-	1.8				1.8				-	
-	1.9				1.9				-	
-	**2**				2				-	
-	2.1				2.1				-	
-	2.2				2.2				-	
-	2.3				2.3				-	
-	2.4				2.4				-	
-	2.5		SANDY CLAY - h plas, grey		2.5				-	
-	2.6				2.6				-	04001/BH01/2.6
-	2.7				2.7				-	
-	2.8		DISCONTINUED @ 2.7 M		2.8				-	
-	2.9				2.9				-	
-	**3**				3				-	
-	3.1				3.1				-	
-	3.2				3.2				-	
-	3.3				3.3				-	
-	3.4				3.4				-	
-	3.5				3.5				-	
-	3.6				3.6				-	
-	3.7				3.7				-	
-	3.8				3.8				-	
-	3.9				3.9				-	
-	**4**				4				-	
-	4.1				4.1				-	
-	4.2				4.2				-	
-	4.3				4.3				-	
-	4.4				4.4				-	
-	4.5				4.5				-	
-	4.6				4.6				-	
-	4.7				4.7				-	
-	4.8				4.8				-	
-	4.9				4.9				-	
-	**5**				5				-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Harrington Dee Why Pty Ltd
Project: Stage 2 Detailed Site Investigation
Location: 154-158 Pacific Pde, Dee Why NSW
Rpt ID: EBG-04001.Stage2.DSI.02.25.R00

Borehole No: 02
Sheet: 1
Date: 11.02.25
Logged By: SM

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Moisture		Observations & Sampling Details
-	0.1				0.1				-	04001/BH02/0.1
-	0.2		SAND - f-m grain, grey, minor building waste		0.2		NO ODOUR		-	
-	0.3		at surface		0.3				-	
-	0.4		DISCONTINUED @ 0.3 - NO SUBFLOOR ACCESS		0.4				-	
-	0.5		(water main and pipes subfloor)		0.5				-	
-	0.6				0.6				-	
-	0.7				0.7				-	
-	0.8				0.8				-	
-	0.9				0.9				-	
-	**1**				1				-	
-	1.1				1.1				-	
-	1.2				1.2				-	
-	1.3				1.3				-	
-	1.4				1.4				-	
-	1.5				1.5				-	
-	1.6				1.6				-	
-	1.7				1.7				-	
-	1.8				1.8				-	
-	1.9				1.9				-	
-	**2**				2				-	
-	2.1				2.1				-	
-	2.2				2.2				-	
-	2.3				2.3				-	
-	2.4				2.4				-	
-	2.5				2.5				-	
-	2.6				2.6				-	
-	2.7				2.7				-	
-	2.8				2.8				-	
-	2.9				2.9				-	
-	**3**				3				-	
-	3.1				3.1				-	
-	3.2				3.2				-	
-	3.3				3.3				-	
-	3.4				3.4				-	
-	3.5				3.5				-	
-	3.6				3.6				-	
-	3.7				3.7				-	
-	3.8				3.8				-	
-	3.9				3.9				-	
-	**4**				4				-	
-	4.1				4.1				-	
-	4.2				4.2				-	
-	4.3				4.3				-	
-	4.4				4.4				-	
-	4.5				4.5				-	
-	4.6				4.6				-	
-	4.7				4.7				-	
-	4.8				4.8				-	
-	4.9				4.9				-	
-	**5**				5				-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Harrington Dee Why Pty Ltd
Project: Stage 2 Detailed Site Investigation
Location: 154-158 Pacific Pde, Dee Why NSW
Rpt ID: EBG-04001.Stage2.DSI.02.25.R00

Borehole No: 03
Sheet: 1
Date: 11.02.25
Logged By: SM

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Moisture	Observations & Sampling Details
-	0.1		FILL SAND - with concrete rubble		0.1			-	04001/BH03/0.1
-	0.2				0.2		PID: 0.0 ppm	-	04001/IntraDup
-	0.3				0.3			-	04001/InterDup
-	0.4		CLAYEY SAND - grey, f-m grain		0.4		NO ODOUR	-	
-	0.5				0.5			-	04001/BH03/0.5
-	0.6				0.6			-	
-	0.7		DISCONTINUED @ 0.6 M		0.7			-	
-	0.8				0.8			-	
-	0.9				0.9			-	
-	**1**				1			-	
-	1.1				1.1			-	
-	1.2				1.2			-	
-	1.3				1.3			-	
-	1.4				1.4			-	
-	1.5				1.5			-	
-	1.6				1.6			-	
-	1.7				1.7			-	
-	1.8				1.8			-	
-	1.9				1.9			-	
-	**2**				2			-	
-	2.1				2.1			-	
-	2.2				2.2			-	
-	2.3				2.3			-	
-	2.4				2.4			-	
-	2.5				2.5			-	
-	2.6				2.6			-	
-	2.7				2.7			-	
-	2.8				2.8			-	
-	2.9				2.9			-	
-	**3**				3			-	
-	3.1				3.1			-	
-	3.2				3.2			-	
-	3.3				3.3			-	
-	3.4				3.4			-	
-	3.5				3.5			-	
-	3.6				3.6			-	
-	3.7				3.7			-	
-	3.8				3.8			-	
-	3.9				3.9			-	
-	**4**				4			-	
-	4.1				4.1			-	
-	4.2				4.2			-	
-	4.3				4.3			-	
-	4.4				4.4			-	
-	4.5				4.5			-	
-	4.6				4.6			-	
-	4.7				4.7			-	
-	4.8				4.8			-	
-	4.9				4.9			-	
-	**5**				5			-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Harrington Dee Why Pty Ltd
Project: Stage 2 Detailed Site Investigation
Location: 154-158 Pacific Pde, Dee Why NSW
Rpt ID: EBG-04001.Stage2.DSI.02.25.R00

Borehole No: 04
Sheet: 1
Date: 11.02.25
Logged By: SM

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Moisture	Observations & Sampling Details
-	0.1				0.1			-	04001/BH04/0.1
-	0.2				0.2		PID: 0.1 ppm	-	
-	0.3		SILTY SAND - grey, f-m grain, some concrete		0.3		Surface rubble	-	
-	0.4		and brick fragments at surface		0.4		grading to natural	-	
-	0.5				0.5		NO ODOUR	-	04001/BH04/0.5
-	0.6				0.6			-	
-	0.7		DISCONTINUED AT 0.6 M		0.7			-	
-	0.8		Access restricted - samples taken via		0.8			-	
-	0.9		floor manhole in staffroom		0.9			-	
-	**1**				1			-	
-	1.1				1.1			-	
-	1.2				1.2			-	
-	1.3				1.3			-	
-	1.4				1.4			-	
-	1.5				1.5			-	
-	1.6				1.6			-	
-	1.7				1.7			-	
-	1.8				1.8			-	
-	1.9				1.9			-	
-	**2**				2			-	
-	2.1				2.1			-	
-	2.2				2.2			-	
-	2.3				2.3			-	
-	2.4				2.4			-	
-	2.5				2.5			-	
-	2.6				2.6			-	
-	2.7				2.7			-	
-	2.8				2.8			-	
-	2.9				2.9			-	
-	**3**				3			-	
-	3.1				3.1			-	
-	3.2				3.2			-	
-	3.3				3.3			-	
-	3.4				3.4			-	
-	3.5				3.5			-	
-	3.6				3.6			-	
-	3.7				3.7			-	
-	3.8				3.8			-	
-	3.9				3.9			-	
-	**4**				4			-	
-	4.1				4.1			-	
-	4.2				4.2			-	
-	4.3				4.3			-	
-	4.4				4.4			-	
-	4.5				4.5			-	
-	4.6				4.6			-	
-	4.7				4.7			-	
-	4.8				4.8			-	
-	4.9				4.9			-	
-	**5**				5			-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Harrington Dee Why Pty Ltd
Project: Stage 2 Detailed Site Investigation
Location: 154-158 Pacific Pde, Dee Why NSW
Rpt ID: EBG-04001.Stage2.DSI.02.25.R00

Borehole No: 05
Sheet: 1
Date: 11.02.25
Logged By: SM

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Moisture	Observations & Sampling Details
-	0.1				0.1		PID: 0.1 ppm	-	04001/BH05/0.1
-	0.2		CLAYEY SAND - grey, f-m grain, mixed with		0.2		NO ODOUR	-	
-	0.3		concrete rubble		0.3			-	
-	0.4		NO ACCESS >0.3 M		0.4			-	
-	0.5				0.5			-	
-	0.6				0.6			-	
-	0.7				0.7			-	
-	0.8				0.8			-	
-	0.9				0.9			-	
-	**1**				1			-	
-	1.1				1.1			-	
-	1.2				1.2			-	
-	1.3				1.3			-	
-	1.4				1.4			-	
-	1.5				1.5			-	
-	1.6				1.6			-	
-	1.7				1.7			-	
-	1.8				1.8			-	
-	1.9				1.9			-	
-	**2**				2			-	
-	2.1				2.1			-	
-	2.2				2.2			-	
-	2.3				2.3			-	
-	2.4				2.4			-	
-	2.5				2.5			-	
-	2.6				2.6			-	
-	2.7				2.7			-	
-	2.8				2.8			-	
-	2.9				2.9			-	
-	**3**				3			-	
-	3.1				3.1			-	
-	3.2				3.2			-	
-	3.3				3.3			-	
-	3.4				3.4			-	
-	3.5				3.5			-	
-	3.6				3.6			-	
-	3.7				3.7			-	
-	3.8				3.8			-	
-	3.9				3.9			-	
-	**4**				4			-	
-	4.1				4.1			-	
-	4.2				4.2			-	
-	4.3				4.3			-	
-	4.4				4.4			-	
-	4.5				4.5			-	
-	4.6				4.6			-	
-	4.7				4.7			-	
-	4.8				4.8			-	
-	4.9				4.9			-	
-	**5**				5			-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Harrington Dee Why Pty Ltd
Project: Stage 2 Detailed Site Investigation
Location: 154-158 Pacific Pde, Dee Why NSW
Rpt ID: EBG-04001.Stage2.DSI.02.25.R00

Borehole No: 06
Sheet: 1
Date: 11.02.25
Logged By: SM

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Moisture	Observations & Sampling Details
-	0.1				0.1		PID: 0.1 ppm	-	04001/BH06/0.1
-	0.2		SILTY SAND - drk grey, f-m grain, some roots		0.2		TOPSOIL	-	
-	0.3				0.3			-	
-	0.4				0.4			-	
-	0.5				0.5		NATURAL	-	
-	0.6				0.6			-	
-	0.7		CLAYEY SAND - grey to dark grey		0.7		PID: 0.1 ppm	-	04001/BH06/0.7
-	0.8				0.8			-	
-	0.9				0.9			-	
-	**1**				1			-	
-	1.1				1.1		NO ODOUR	-	
-	1.2				1.2			-	
-	1.3				1.3			-	
-	1.4		SANDY CLAY - grey		1.4			-	
-	1.5				1.5			-	
-	1.6				1.6			-	
-	1.7				1.7			-	
-	1.8				1.8			-	
-	1.9				1.9			-	
-	**2**				2			-	
-	2.1				2.1			-	04001/BH06/2.1
-	2.2				2.2			-	
-	2.3				2.3			-	
-	2.4				2.4			-	
-	2.5		DISCONTINUED @ 2.4 M		2.5			-	
-	2.6				2.6			-	
-	2.7				2.7			-	
-	2.8				2.8			-	
-	2.9				2.9			-	
-	**3**				3			-	
-	3.1				3.1			-	
-	3.2				3.2			-	
-	3.3				3.3			-	
-	3.4				3.4			-	
-	3.5				3.5			-	
-	3.6				3.6			-	
-	3.7				3.7			-	
-	3.8				3.8			-	
-	3.9				3.9			-	
-	**4**				4			-	
-	4.1				4.1			-	
-	4.2				4.2			-	
-	4.3				4.3			-	
-	4.4				4.4			-	
-	4.5				4.5			-	
-	4.6				4.6			-	
-	4.7				4.7			-	
-	4.8				4.8			-	
-	4.9				4.9			-	
-	**5**				5			-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Harrington Dee Why Pty Ltd
Project: Stage 2 Detailed Site Investigation
Location: 154-158 Pacific Pde, Dee Why NSW
Rpt ID: EBG-04001.Stage2.DSI.02.25.R00

Borehole No: 07
Sheet: 1
Date: 11.02.25
Logged By: SM

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Moisture	Observations & Sampling Details
-	0.1				0.1		PID: 0.1 ppm	-	04001/BH07/0.1
-	0.2				0.2		TOPSOIL	-	
-	0.3		SILTY SAND - dark grey, f-m grain		0.3			-	
-	0.4				0.4			-	
-	0.5				0.5		NO ODOUR	-	
-	0.6				0.6			-	
-	0.7				0.7		PID: 0.1 ppm	-	
-	0.8				0.8		NATURAL	-	04001/BH07/0.8
-	0.9				0.9			-	
-	1		CLAYEY SAND - grey, f-m grain		1			-	
-	1.1				1.1			-	
-	1.2				1.2			-	
-	1.3				1.3			-	
-	1.4				1.4			-	
-	1.5				1.5			-	
-	1.6		DISCONTINUED @ 1.5 M		1.6			-	
-	1.7				1.7			-	
-	1.8				1.8			-	
-	1.9				1.9			-	
-	2				2			-	
-	2.1				2.1			-	
-	2.2				2.2			-	
-	2.3				2.3			-	
-	2.4				2.4			-	
-	2.5				2.5			-	
-	2.6				2.6			-	
-	2.7				2.7			-	
-	2.8				2.8			-	
-	2.9				2.9			-	
-	3				3			-	
-	3.1				3.1			-	
-	3.2				3.2			-	
-	3.3				3.3			-	
-	3.4				3.4			-	
-	3.5				3.5			-	
-	3.6				3.6			-	
-	3.7				3.7			-	
-	3.8				3.8			-	
-	3.9				3.9			-	
-	4				4			-	
-	4.1				4.1			-	
-	4.2				4.2			-	
-	4.3				4.3			-	
-	4.4				4.4			-	
-	4.5				4.5			-	
-	4.6				4.6			-	
-	4.7				4.7			-	
-	4.8				4.8			-	
-	4.9				4.9			-	
-	5				5			-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

EBG Environmental Geoscience
(Edwards Blasche Group Pty Ltd ABN 54 085 829 250)

Environmental Borehole Log

Client: Harrington Dee Why Pty Ltd
Project: Stage 2 Detailed Site Investigation
Location: 154-158 Pacific Pde, Dee Why NSW
Rpt ID: EBG-04001.Stage2.DSI.02.25.R00

Borehole No: 08
Sheet: 1
Date: 11.02.25
Logged By: SM

RL	Depth (m)	Graphic Log	Description of Strata	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Moisture		Observations & Sampling Details
-	0.1				0.1				-	
-	0.2		SILTY SAND - dark grey, f-m grain, some		0.2		PID: 0.0 ppm		-	04001/BH08/0.2
-	0.3		crushed yellow sandstone		0.3		FILL		-	
-	0.4				0.4				-	
-	0.5				0.5				-	
-	0.6				0.6				-	
-	0.7				0.7		NATURAL		-	
-	0.8				0.8				-	04001/BH08/0.8
-	0.9		CLAYEY SAND - grey to drk grey, f-m grain		0.9				-	
-	**1**				1				-	
-	1.1				1.1		NO ODOUR		-	
-	1.2				1.2				-	
-	1.3				1.3				-	
-	1.4				1.4				-	
-	1.5				1.5				-	
-	1.6		DISCONTINUED @ 1.5 M		1.6				-	
-	1.7				1.7				-	
-	1.8				1.8				-	
-	1.9				1.9				-	
-	**2**				2				-	
-	2.1				2.1				-	
-	2.2				2.2				-	
-	2.3				2.3				-	
-	2.4				2.4				-	
-	2.5				2.5				-	
-	2.6				2.6				-	
-	2.7				2.7				-	
-	2.8				2.8				-	
-	2.9				2.9				-	
-	**3**				3				-	
-	3.1				3.1				-	
-	3.2				3.2				-	
-	3.3				3.3				-	
-	3.4				3.4				-	
-	3.5				3.5				-	
-	3.6				3.6				-	
-	3.7				3.7				-	
-	3.8				3.8				-	
-	3.9				3.9				-	
-	**4**				4				-	
-	4.1				4.1				-	
-	4.2				4.2				-	
-	4.3				4.3				-	
-	4.4				4.4				-	
-	4.5				4.5				-	
-	4.6				4.6				-	
-	4.7				4.7				-	
-	4.8				4.8				-	
-	4.9				4.9				-	
-	**5**				5				-	

WEATHERING	NOTES			CONSISTENCY / DENSITY INDEX	
Fr - fresh	US - undisturbed sample	MOISTURE	STRENGTH	fb - friable	vs - very soft
SW - slightly weathered	DS - disturbed sample	D - dry	els - ext low	vl - very loose	s - soft
MW - mod weathered	N - stan. pen. test	M - moist	vls- very low	l - loose	ff - firm
HW - highly weathered	NS - spt + sample	W - wet	ls - low	md - med dense	st - stiff
EW - extremely weathered	NC - cone pntmeter		ms - med	d - dense	vst - very stiff
			hs - high	d - dense	h - hard
			vhs - very high	vd - very dense	
			ehs - ext high		

APPENDIX D:
CHAIN OF CUSTODY AND LABORATORY RESULTS

CoC: 11/02/2025 1636.

EBG Environmental Geoscience

POST: PO Box 5069, Gwandalan NSW 2259
MOB: +61 (0)419 997 778
EMAIL: contact@ebgroup.com.au
WEBSITE: www.ebgroup.com.au

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

Job No: 372678

Date Received: 11/2/25
Time Received: ~~0900~~ 1100
Received By: CH
Temp: Cool/Ambient 14°C.
Cooling: Ice/Icepack
Security: Intact/Broken/None

CHAIN OF CUSTODY

PROJECT NAME: Stage 2 Detailed Site Investigation
ADDRESS: 154-158 Pacific Parade, Dee Why NSW
JOB NO: EBG-04001.Stage2.DSI.02.25.R00
CONTACT: Michael Edwards
REPORT TO: michael@ebgroup.com.au
PRIOR STORAGE: Esky / Fridge / Ice

PAGE.....1... OF.....3.....

TO: Envirolab Services
12 Ashley Street
Chatswood NSW 2067

CONTACT: T: 0419 997 778
E: michael@ebgroup.com.au

	Sample Information				Tests Required											Comments
	Sample ID	Date Sampled	Sampled By	Sample Type	Inorganics		Organics					Cont. Suites / Other				Provide as much information as possible
					Metals x8	Pb	BTEX	TRH	PAHs	VOCs	pH	Combo 3	Combo 3 + Asbestos	Combo 5 + Asbestos	CEC	
1	04001/BH01/0.2	11/02/25	SM	SOIL							X	X				
2	04001/BH01/2.6	11/02/25	SM	SOIL						X		X				
3	04001/BH02/0.1	11/02/25	SM	SOIL							X		X			
4	04001/BH03/0.1	11/02/25	SM	SOIL							X		X			
5	04001/BH03/0.5	11/02/25	SM	SOIL								X			X	
6	04001/BH04/0.1	11/02/25	SM	SOIL							X		X			
7	04001/BH04/0.5	11/02/25	SM	SOIL								X				
8	04001/BH05/0.1	11/02/25	SM	SOIL							X			X		
9	04001/BH06/0.1	11/02/25	SM	SOIL							X		X			
10	04001/BH06/0.7	11/02/25	SM	SOIL								X				

Relinquished By (Company): EBG Environmental	**Received By (Company):** ECS SYD	**Turnaround Time:**	24 hour
			24-36 hours
Print Name: Michael Edwards	**Print Name:** Christine Ho		36-48 hours
Date and Time: 09/02/25	**Date and Time:** 11/2/25 ~~0900~~ 1100		3 days
Signature: Michael Edwards	**Signature:**		Standard X

COC: 11/02/2025 1636

EBG Environmental Geoscience

POST: PO Box 5069, Gwandalan NSW 2259
MOB: +61 (0)419 997 778
EMAIL: contact@ebgroup.com.au
WEBSITE: www.ebgroup.com.au

CHAIN OF CUSTODY

PROJECT NAME: Stage 2 Detailed Site Investigation
ADDRESS: 154-158 Pacific Parade, Dee Why NSW
JOB NO: EBG-04001.Stage2.DSI.02.25.R00
CONTACT: Michael Edwards
REPORT TO: michael@ebgroup.com.au
PRIOR STORAGE: Esky / Fridge / Ice

PAGE.....2... OF.....3.....

TO: Envirolab Services
12 Ashley Street
Chatswood NSW 2067

CONTACT: T: 0419 997 778
E: michael@ebgroup.com.au

#372678
CH
11/2/25

	Sample Information				Tests Required											Comments
	Sample ID	Date Sampled	Sampled By	Sample Type	Inorganics		Organics					Cont. Suites / Other				Provide as much information as possible
					Metals x8	Pb	BTEX	TRH	PAHs	VOCs	pH	Combo 3	Combo 3 + Asbestos	Combo 5 + Asbestos	ASBESTOS	
11	04001/BH06/2.1	11/02/25	SM	SOIL						X		X				
12	04001/BH07/0.1	11/02/25	SM	SOIL							X		X			
13	04001/BH07/0.8	11/02/25	SM	SOIL								X				
14	04001/BH08/0.2	11/02/25	SM	SOIL							X		X			
15	04001/BH08/0.8	11/02/25	SM	SOIL						X		X				
16	04001/IntraDup	11/02/25	SM	SOIL	X											
17	04001/RIN	11/02/25	SM	WATER	X											
18	04001/TB	11/02/25	SM	SOIL			X									
19	04001/TS	11/02/25	SM	SOIL	% Volatile Loss											
20	04001/BH01/0.2 Fragment / Material	11/02/25	SM	MATERIAL											X	

Relinquished By (Company): EBG Environmental	**Received By (Company):** ECS SYD	**Turnaround Time:**	24 hour
Print Name: Michael Edwards	**Print Name:** CH		24-36 hours
Date and Time: 09/02/25	**Date and Time:** 11/2/25		36-48 hours
Signature: Michael Edwards	**Signature:**		3 days
			Standard X

COC 11/02/2025 1636

EBG Environmental Geoscience

POST: PO Box 5069, Gwandalan NSW 2259
MOB: +61 (0)419 997 778
EMAIL: contact@ebgroup.com.au
WEBSITE: www.ebgroup.com.au

CHAIN OF CUSTODY

#36
372678
ct
11/2/25

PROJECT NAME: Stage 2 Detailed Site Investigation
ADDRESS: 154-158 Pacific Parade, Dee Why NSW
JOB NO: EBG-04001.Stage2.DSI.02.25.R00 (GROUNDWATER)
CONTACT: Michael Edwards
REPORT TO: michael@ebgroup.com.au
PRIOR STORAGE: Esky / Fridge / Ice

PAGE...3..... OF...3.....

TO: Envirolab Services
12 Ashley Street
Chatswood NSW 2067

CONTACT: T: 0419 997 778
E: michael@ebgroup.com.au

	Sample Information				Tests Required										Comments
					Inorganics		Organics					Cont. Suites / Other			
	Sample ID	Date Sampled	Sampled By	Sample Type	Metals x8	Pb	BTEX	TRH	PAHs	VOCs	pH	Combo 3	Turbidity, Nitrate, Ammonia, Total Nitrogen, Total Phosphorus, Total Suspended Solids		Provide as much information as possible
21	04001/GW01	11/02/25	ME	WATER						X	X	X			
22	04001/GW02	11/02/25	ME	WATER						X	X	X			
23	04001/GW03	11/02/25	ME	WATER						X	X	X	X		
24	04001/GW-Intra	11/02/25	ME	WATER	X										
25	04001/TB	11/02/25	ME	WATER			X								
26	04001/TS	11/02/25	ME	WATER	% Volatile Loss										
Extra ct. 27	04001/BH01/0.7	11/2/25	SM	Soil											
	04001/														
	04001/														
	04001/														

Relinquished By (Company): EBG Environmental	**Received By (Company):** ECS SYD	**Turnaround Time:**	24 hour
			24-36 hours
Print Name: Michael Edwards	**Print Name:** ct		36-48 hours
Date and Time: 09/02/25	**Date and Time:** 11/2/25		3 days
Signature: Michael Edwards	**Signature:** ~~to~~		Standard X

coc: 11/02/2025 16361

EBG Environmental Geoscience

POST: PO Box 5069, Gwandalan NSW 2259
MOB: +61 (0)419 997 778
EMAIL: contact@ebgroup.com.au
WEBSITE: www.ebgroup.com.au

#372678
11/2/25
CH.

CHAIN OF CUSTODY

PROJECT NAME: Stage 2 Detailed Site Investigation
ADDRESS: 154-158 Pacific Parade, Dee Why NSW
JOB NO: EBG-04001.Stage2.DSI.02.25.R00
CONTACT: Michael Edwards
REPORT TO: michael@ebgroup.com.au
PRIOR STORAGE: Esky / Fridge / Ice

PAGE 1 OF 1 **(Inter Lab Duplicate)**

TO: Envirolab Services
MELBOURNE

CONTACT: T: 0419 997 778
E: michael@ebgroup.com.au

Sample Information				Tests Required											Comments
Sample ID	Date Sampled	Sampled By	Sample Type	Inorganics		Organics					Cont. Suites / Other				Provide as much information as possible
				Metals x8	Pb	BTEX	TRH	PAHs	VOCs	pH	Combo 3	Combo 3 + Asbestos	Combo 5 + Asbestos	CEC	
04001/InterDup	11/02/25	SM	SOIL	X											
04001/GW-Inter	11/02/25	ME	WATER	X											
04001/															
04001/															
04001/															
04001/															
04001/															
04001/															
04001/															
04001/															

Relinquished By (Company): EBG Environmental	**Received By (Company):** ECS SYD	**Turnaround Time:**	24 hour
			24-36 hours
Print Name: Michael Edwards	**Print Name:** Christine Ho		36-48 hours
Date and Time: 09/02/25	**Date and Time:** 11/2/25		3 days
Signature: Michael Edwards	**Signature:**		Standard X

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

SAMPLE RECEIPT ADVICE

Client Details

Client	Edwards Blasche Group
Attention	Michael Edwards

Sample Login Details

Your reference	EBG-04001.Stage2.DSI.02.25.R00
Envirolab Reference	372678
Date Sample Received	11/02/2025
Date Instructions Received	11/02/2025
Date Results Expected to be Reported	18/02/2025

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	19 Soil, 7 Water, 1 Material
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	14
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Received extra sample: 04001/BH01/0.7

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
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Sample ID	VOCs in soil	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	PCBs in Soil	Acid Extractable metalsin soil	Asbestos ID - soils	Misc Inorg - Soil	CEC	Asbestos ID - materials	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	HM in water - dissolved	Metals in Waters -Acid extractable	pH	Turbidity	Nitrate as N in water	Ammonia as N in water	Total Nitrogen in water	Total Suspended Solids	On Hold
04001/BH01/0.2		✓	✓	✓			✓		✓															
04001/BH01/2.6	✓	✓	✓	✓			✓																	
04001/BH02/0.1		✓	✓	✓			✓	✓	✓															
04001/BH03/0.1		✓	✓	✓			✓	✓	✓															
04001/BH03/0.5		✓	✓	✓			✓			✓														
04001/BH04/0.1		✓	✓	✓			✓	✓	✓															
04001/BH04/0.5		✓	✓	✓			✓																	
04001/BH05/0.1		✓	✓	✓	✓	✓	✓	✓	✓															
04001/BH06/0.1		✓	✓	✓			✓	✓	✓															
04001/BH06/0.7		✓	✓	✓			✓																	
04001/BH06/2.1	✓	✓	✓	✓			✓																	
04001/BH07/0.1		✓	✓	✓			✓	✓	✓															
04001/BH07/0.8		✓	✓	✓			✓																	
04001/BH08/0.2		✓	✓	✓			✓	✓	✓															
04001/BH08/0.8	✓	✓	✓	✓			✓																	
04001/IntraDup							✓																	
04001/RIN																✓								
04001/TB		✓																						
04001/TS		✓																						
04001/BH01/0.2											✓													

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Sample ID	VOCs in soil	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	PCBs in Soil	Acid Extractable metalsin soil	Asbestos ID - soils	Misc Inorg - Soil	CEC	Asbestos ID - materials	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	HM in water - dissolved	Metals in Waters -Acid extractable	pH	Turbidity	Nitrate as N in water	Ammonia as N in water	Total Nitrogen in water	Total Suspended Solids	On Hold
04001/GW01												✓	✓	✓	✓	✓		✓						
04001/GW02												✓	✓	✓	✓	✓		✓						
04001/GW03												✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
04001/GW-Intra																✓								
04001/TB													✓											
04001/TS													✓											
04001/BH01/0.7																								✓

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

Additional Info

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

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

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

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

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CERTIFICATE OF ANALYSIS 372678

Client Details

Client	Edwards Blasche Group
Attention	Michael Edwards
Address	47 QuinalupSt, GWANDALAN, NSW, 2259

Sample Details

Your Reference	**EBG-04001.Stage2.DSI.02.25.R00**
Number of Samples	19 Soil, 7 Water, 1 Material
Date samples received	11/02/2025
Date completed instructions received	11/02/2025

Analysis Details

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

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

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

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

Report Details

Date results requested by	18/02/2025
Date of Issue	18/02/2025

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

Results Approved By
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Jenny He, Inorganic Team Leader
Liam Timmins, Organics Supervisor
Lucy Zhu, Asbestos Supervisor
Nancy Zhang, Laboratory Manager, Sydney
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

VOCs in soil				
Our Reference		372678-2	372678-11	372678-15
Your Reference	UNITS	04001/BH01/2.6	04001/BH06/2.1	04001/BH08/0.8
Date Sampled		11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil
Date Extracted	-	12/02/2025	12/02/2025	12/02/2025
Date Analysed	-	14/02/2025	14/02/2025	17/02/2025
Dichlorodifluoromethane	mg/kg	<1	<1	<1
Chloromethane	mg/kg	<1	<1	<1
Vinyl Chloride	mg/kg	<1	<1	<1
Bromomethane	mg/kg	<1	<1	<1
Chloroethane	mg/kg	<1	<1	<1
Trichlorofluoromethane	mg/kg	<1	<1	<1
1,1-Dichloroethene	mg/kg	<1	<1	<1
trans-1,2-Dichloroethene	mg/kg	<1	<1	<1
1,1-Dichloroethane	mg/kg	<1	<1	<1
cis-1,2-Dichloroethene	mg/kg	<1	<1	<1
Bromochloromethane	mg/kg	<1	<1	<1
Chloroform	mg/kg	<1	<1	<1
2,2-Dichloropropane	mg/kg	<1	<1	<1
1,2-Dichloroethane	mg/kg	<1	<1	<1
1,1,1-Trichloroethane	mg/kg	<1	<1	<1
1,1-Dichloropropene	mg/kg	<1	<1	<1
Cyclohexane	mg/kg	<1	<1	<1
Carbon Tetrachloride	mg/kg	<1	<1	<1
Benzene	mg/kg	<0.2	<0.2	<0.2
Dibromomethane	mg/kg	<1	<1	<1
1,2-Dichloropropane	mg/kg	<1	<1	<1
Trichloroethene	mg/kg	<1	<1	<1
Bromodichloromethane	mg/kg	<1	<1	<1
trans-1,3-Dichloropropene	mg/kg	<1	<1	<1
cis-1,3-Dichloropropene	mg/kg	<1	<1	<1
1,1,2-Trichloroethane	mg/kg	<1	<1	<1
Toluene	mg/kg	<0.5	<0.5	<0.5
1,3-Dichloropropane	mg/kg	<1	<1	<1
Dibromochloromethane	mg/kg	<1	<1	<1
1,2-Dibromoethane	mg/kg	<1	<1	<1
Tetrachloroethene	mg/kg	<1	<1	<1
1,1,1,2-Tetrachloroethane	mg/kg	<1	<1	<1
Chlorobenzene	mg/kg	<1	<1	<1
Ethylbenzene	mg/kg	<1	<1	<1

VOCs in soil				
Our Reference		372678-2	372678-11	372678-15
Your Reference	UNITS	04001/BH01/2.6	04001/BH06/2.1	04001/BH08/0.8
Date Sampled		11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil
Bromoform	mg/kg	<1	<1	<1
m+p-Xylene	mg/kg	<2	<2	<2
Styrene	mg/kg	<1	<1	<1
1,1,2,2-Tetrachloroethane	mg/kg	<1	<1	<1
o-Xylene	mg/kg	<1	<1	<1
1,2,3-Trichloropropane	mg/kg	<1	<1	<1
Isopropylbenzene	mg/kg	<1	<1	<1
Bromobenzene	mg/kg	<1	<1	<1
n-Propylbenzene	mg/kg	<1	<1	<1
2-Chlorotoluene	mg/kg	<1	<1	<1
4-Chlorotoluene	mg/kg	<1	<1	<1
1,3,5-Trimethylbenzene	mg/kg	<1	<1	<1
tert-Butylbenzene	mg/kg	<1	<1	<1
1,2,4-Trimethylbenzene	mg/kg	<1	<1	<1
1,3-Dichlorobenzene	mg/kg	<1	<1	<1
sec-Butylbenzene	mg/kg	<1	<1	<1
1,4-Dichlorobenzene	mg/kg	<1	<1	<1
4-Isopropyltoluene	mg/kg	<1	<1	<1
1,2-Dichlorobenzene	mg/kg	<1	<1	<1
n-Butylbenzene	mg/kg	<1	<1	<1
1,2-Dibromo-3-chloropropane	mg/kg	<1	<1	<1
1,2,4-Trichlorobenzene	mg/kg	<1	<1	<1
Hexachlorobutadiene	mg/kg	<1	<1	<1
1,2,3-Trichlorobenzene	mg/kg	<1	<1	<1
Surrogate Dibromofluoromethane	%	92	99	95
Surrogate aaa-Trifluorotoluene	%	79	83	92
Surrogate Toluene-d_8	%	98	101	101
Surrogate 4-Bromofluorobenzene	%	97	97	97

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		372678-1	372678-2	372678-3	372678-4	372678-5
Your Reference	UNITS	04001/BH01/0.2	04001/BH01/2.6	04001/BH02/0.1	04001/BH03/0.1	04001/BH03/0.5
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	90	79	86	85	90

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		372678-6	372678-7	372678-8	372678-9	372678-10
Your Reference	UNITS	04001/BH04/0.1	04001/BH04/0.5	04001/BH05/0.1	04001/BH06/0.1	04001/BH06/0.7
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	89	91	92	84	84

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		372678-11	372678-12	372678-13	372678-14	372678-15
Your Reference	UNITS	04001/BH06/2.1	04001/BH07/0.1	04001/BH07/0.8	04001/BH08/0.2	04001/BH08/0.8
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	17/02/2025	17/02/2025
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	83	93	96	93	92

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		372678-18	372678-19	372678-27
Your Reference	UNITS	04001/TB	04001/TS	04001/BH01/0.7
Date Sampled		11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	17/02/2025	17/02/2025	17/02/2025
TRH C_6 - C_9	mg/kg	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	[NA]	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NA]	<25
Benzene	mg/kg	<0.2	108%	<0.2
Toluene	mg/kg	<0.5	108%	<0.5
Ethylbenzene	mg/kg	<1	108%	<1
m+p-xylene	mg/kg	<2	108%	<2
o-Xylene	mg/kg	<1	[NA]	<1
Naphthalene	mg/kg	<1	[NA]	<1
Total +ve Xylenes	mg/kg	<1	[NT]	<1
Surrogate aaa-Trifluorotoluene	%	90	90	83

svTRH (C10-C40) in Soil						
Our Reference		372678-1	372678-2	372678-3	372678-4	372678-5
Your Reference	UNITS	04001/BH01/0.2	04001/BH01/2.6	04001/BH02/0.1	04001/BH03/0.1	04001/BH03/0.5
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	15/02/2025	15/02/2025	15/02/2025	15/02/2025	15/02/2025
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	90	88	80	80	76

svTRH (C10-C40) in Soil						
Our Reference		372678-6	372678-7	372678-8	372678-9	372678-10
Your Reference	UNITS	04001/BH04/0.1	04001/BH04/0.5	04001/BH05/0.1	04001/BH06/0.1	04001/BH06/0.7
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	15/02/2025	15/02/2025	15/02/2025	15/02/2025	15/02/2025
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	78	76	79	87	84

svTRH (C10-C40) in Soil						
Our Reference		372678-11	372678-12	372678-13	372678-14	372678-15
Your Reference	UNITS	04001/BH06/2.1	04001/BH07/0.1	04001/BH07/0.8	04001/BH08/0.2	04001/BH08/0.8
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	15/02/2025	15/02/2025	15/02/2025	15/02/2025	15/02/2025
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	76	81	85	74	84

svTRH (C10-C40) in Soil		
Our Reference		372678-27
Your Reference	UNITS	04001/BH01/0.7
Date Sampled		11/02/2025
Type of sample		Soil
Date extracted	-	12/02/2025
Date analysed	-	15/02/2025
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	73

PAHs in Soil						
Our Reference		372678-1	372678-2	372678-3	372678-4	372678-5
Your Reference	UNITS	04001/BH01/0.2	04001/BH01/2.6	04001/BH02/0.1	04001/BH03/0.1	04001/BH03/0.5
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	1.3	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.3	<0.1	2.4	<0.1	<0.1
Pyrene	mg/kg	0.4	<0.1	2.3	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.2	<0.1	0.7	<0.1	<0.1
Chrysene	mg/kg	0.2	<0.1	1.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.3	<0.2	2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	<0.05	1.2	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	0.8	<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	0.2	<0.1	1.1	<0.1	<0.1
Total +ve PAH's	mg/kg	1.9	<0.05	13	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	1.7	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	1.7	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	1.7	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	78	76	83	73	78

PAHs in Soil						
Our Reference		372678-6	372678-7	372678-8	372678-9	372678-10
Your Reference	UNITS	04001/BH04/0.1	04001/BH04/0.5	04001/BH05/0.1	04001/BH06/0.1	04001/BH06/0.7
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.2	0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.3	0.4	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.4	0.4	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.1	0.2	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.2	0.3	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.4	0.5	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.2	0.3	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.1	0.2	<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	0.2	0.3	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	2.2	2.7	<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	%	72	69	71	71	73

PAHs in Soil						
Our Reference		372678-11	372678-12	372678-13	372678-14	372678-15
Your Reference	UNITS	04001/BH06/2.1	04001/BH07/0.1	04001/BH07/0.8	04001/BH08/0.2	04001/BH08/0.8
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.6	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	1.5	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	1.6	<0.1	0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.6	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.9	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	2	<0.2	0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	1.1	<0.05	0.2	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.7	<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	1	<0.1	0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	9.8	<0.05	0.67	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	1.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	1.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	1.6	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	74	70	77	74	63

PAHs in Soil		
Our Reference		372678-27
Your Reference	UNITS	04001/BH01/0.7
Date Sampled		11/02/2025
Type of sample		Soil
Date extracted	-	12/02/2025
Date analysed	-	14/02/2025
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	64

Organochlorine Pesticides in soil		
Our Reference		372678-8
Your Reference	UNITS	04001/BH05/0.1
Date Sampled		11/02/2025
Type of sample		Soil
Date extracted	-	12/02/2025
Date analysed	-	18/02/2025
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Mirex	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1
Surrogate 4-Chloro-3-NBTF	%	83

PCBs in Soil		
Our Reference		372678-8
Your Reference	UNITS	04001/BH05/0.1
Date Sampled		11/02/2025
Type of sample		Soil
Date extracted	-	12/02/2025
Date analysed	-	18/02/2025
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate 2-Fluorobiphenyl	%	75

Acid Extractable metals in soil						
Our Reference		372678-1	372678-2	372678-3	372678-4	372678-5
Your Reference	UNITS	04001/BH01/0.2	04001/BH01/2.6	04001/BH02/0.1	04001/BH03/0.1	04001/BH03/0.5
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Arsenic	mg/kg	7	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	0.6	<0.4
Chromium	mg/kg	18	25	4	9	2
Copper	mg/kg	18	2	9	230	1
Lead	mg/kg	120	41	31	71	7
Mercury	mg/kg	0.2	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	6	12	1	7	<1
Zinc	mg/kg	230	130	130	570	6

Acid Extractable metals in soil						
Our Reference		372678-6	372678-7	372678-8	372678-9	372678-10
Your Reference	UNITS	04001/BH04/0.1	04001/BH04/0.5	04001/BH05/0.1	04001/BH06/0.1	04001/BH06/0.7
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Arsenic	mg/kg	<4	<4	5	<4	<4
Cadmium	mg/kg	<0.4	<0.4	1	<0.4	<0.4
Chromium	mg/kg	3	2	12	10	1
Copper	mg/kg	11	<1	120	16	<1
Lead	mg/kg	100	5	320	68	7
Mercury	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Nickel	mg/kg	1	<1	9	3	<1
Zinc	mg/kg	130	4	1,200	68	2

Acid Extractable metals in soil						
Our Reference		372678-11	372678-12	372678-13	372678-14	372678-15
Your Reference	UNITS	04001/BH06/2.1	04001/BH07/0.1	04001/BH07/0.8	04001/BH08/0.2	04001/BH08/0.8
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	6	<1	43	3
Copper	mg/kg	<1	20	2	2	<1
Lead	mg/kg	13	97	10	16	7
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	1	3	<1	1	<1
Zinc	mg/kg	2	200	32	29	1

Acid Extractable metals in soil			
Our Reference		372678-16	372678-27
Your Reference	UNITS	04001/IntraDup	04001/BH01/0.7
Date Sampled		11/02/2025	11/02/2025
Type of sample		Soil	Soil
Date prepared	-	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025
Arsenic	mg/kg	<4	<4
Cadmium	mg/kg	0.6	<0.4
Chromium	mg/kg	8	4
Copper	mg/kg	660	16
Lead	mg/kg	81	47
Mercury	mg/kg	0.2	0.2
Nickel	mg/kg	6	2
Zinc	mg/kg	340	130

Moisture						
Our Reference		372678-1	372678-2	372678-3	372678-4	372678-5
Your Reference	UNITS	04001/BH01/0.2	04001/BH01/2.6	04001/BH02/0.1	04001/BH03/0.1	04001/BH03/0.5
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	13/02/2025	13/02/2025	13/02/2025	13/02/2025	13/02/2025
Moisture	%	25	27	1.5	4.3	6.4

Moisture						
Our Reference		372678-6	372678-7	372678-8	372678-9	372678-10
Your Reference	UNITS	04001/BH04/0.1	04001/BH04/0.5	04001/BH05/0.1	04001/BH06/0.1	04001/BH06/0.7
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	13/02/2025	13/02/2025	13/02/2025	13/02/2025	13/02/2025
Moisture	%	4.8	7.1	3.1	11	8.3

Moisture						
Our Reference		372678-11	372678-12	372678-13	372678-14	372678-15
Your Reference	UNITS	04001/BH06/2.1	04001/BH07/0.1	04001/BH07/0.8	04001/BH08/0.2	04001/BH08/0.8
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/02/2025	12/02/2025	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	13/02/2025	13/02/2025	13/02/2025	13/02/2025	13/02/2025
Moisture	%	13	9.7	5.9	14	12

Moisture			
Our Reference		372678-16	372678-27
Your Reference	UNITS	04001/IntraDup	04001/BH01/0.7
Date Sampled		11/02/2025	11/02/2025
Type of sample		Soil	Soil
Date prepared	-	12/02/2025	12/02/2025
Date analysed	-	13/02/2025	13/02/2025
Moisture	%	4.0	12

Asbestos ID - soils						
Our Reference		372678-3	372678-4	372678-6	372678-8	372678-9
Your Reference	UNITS	04001/BH02/0.1	04001/BH03/0.1	04001/BH04/0.1	04001/BH05/0.1	04001/BH06/0.1
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Sample mass tested	g	Approx. 30g	Approx. 40g	Approx. 30g	Approx. 30g	Approx. 25g
Sample Description	-	Brown sandy soil	Brown sandy soil	Brown sandy soil	Brown sandy soil	Brown sandy soil
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		372678-12	372678-14
Your Reference	UNITS	04001/BH07/0.1	04001/BH08/0.2
Date Sampled		11/02/2025	11/02/2025
Type of sample		Soil	Soil
Date analysed	-	17/02/2025	17/02/2025
Sample mass tested	g	Approx. 25g	Approx. 25g
Sample Description	-	Brown sandy soil	Brown sandy soil
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
Asbestos comments	-	Nil	Nil
Trace Analysis	-	No asbestos detected	No asbestos detected

Misc Inorg - Soil						
Our Reference		372678-1	372678-3	372678-4	372678-6	372678-8
Your Reference	UNITS	04001/BH01/0.2	04001/BH02/0.1	04001/BH03/0.1	04001/BH04/0.1	04001/BH05/0.1
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/02/2025	13/02/2025	13/02/2025	13/02/2025	13/02/2025
Date analysed	-	13/02/2025	13/02/2025	13/02/2025	13/02/2025	13/02/2025
pH 1:5 soil:water	pH Units	7.5	8.0	9.2	8.3	8.0

Misc Inorg - Soil				
Our Reference		372678-9	372678-12	372678-14
Your Reference	UNITS	04001/BH06/0.1	04001/BH07/0.1	04001/BH08/0.2
Date Sampled		11/02/2025	11/02/2025	11/02/2025
Type of sample		Soil	Soil	Soil
Date prepared	-	13/02/2025	13/02/2025	13/02/2025
Date analysed	-	13/02/2025	13/02/2025	13/02/2025
pH 1:5 soil:water	pH Units	7.5	7.5	8.5

CEC		
Our Reference		372678-5
Your Reference	UNITS	04001/BH03/0.5
Date Sampled		11/02/2025
Type of sample		Soil
Date prepared	-	17/02/2025
Date analysed	-	17/02/2025
Exchangeable Ca	meq/100g	2.2
Exchangeable K	meq/100g	0.1
Exchangeable Mg	meq/100g	0.2
Exchangeable Na	meq/100g	0.1
Cation Exchange Capacity	meq/100g	2.7

Asbestos ID - materials		
Our Reference		372678-20
Your Reference	UNITS	04001/BH01/0.2
Date Sampled		11/02/2025
Type of sample		Material
Date analysed	-	12/02/2025
Mass / Dimension of Sample	-	65x40x13mm
Sample Description	-	Grey fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected Crocidolite asbestos detected
Trace Analysis	-	[NT]

VOCs in water				
Our Reference	UNITS	372678-21	372678-22	372678-23
Your Reference		04001/GW01	04001/GW02	04001/GW03
Date Sampled		11/02/2025	11/02/2025	11/02/2025
Type of sample		Water	Water	Water
Date Extracted	-	17/02/2025	17/02/2025	17/02/2025
Date Analysed	-	18/02/2025	18/02/2025	18/02/2025
Dichlorodifluoromethane	µg/L	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1
Chloroform	µg/L	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1
Benzene	µg/L	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1
Toluene	µg/L	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1

VOCs in water				
Our Reference	UNITS	372678-21	372678-22	372678-23
Your Reference		04001/GW01	04001/GW02	04001/GW03
Date Sampled		11/02/2025	11/02/2025	11/02/2025
Type of sample		Water	Water	Water
Bromoform	µg/L	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2
Styrene	µg/L	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1
o-xylene	µg/L	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1
Surrogate Dibromofluoromethane	%	101	105	102
Surrogate Toluene-d8	%	99	99	99
Surrogate 4-Bromofluorobenzene	%	92	97	90

vTRH(C6-C10)/BTEXN in Water						
Our Reference	UNITS	372678-21	372678-22	372678-23	372678-25	372678-26
Your Reference		04001/GW01	04001/GW02	04001/GW03	04001/TB	04001/TS
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Date analysed	-	18/02/2025	18/02/2025	18/02/2025	18/02/2025	18/02/2025
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	[NA]
Benzene	µg/L	<1	<1	<1	<1	113%
Toluene	µg/L	<1	<1	<1	<1	119%
Ethylbenzene	µg/L	<1	<1	<1	<1	119%
m+p-xylene	µg/L	<2	<2	<2	<2	112%
o-xylene	µg/L	<1	<1	<1	<1	118%
Naphthalene	µg/L	<1	<1	<1	<1	[NA]
Surrogate Dibromofluoromethane	%	101	105	102	100	104
Surrogate Toluene-d8	%	99	99	99	98	100
Surrogate 4-Bromofluorobenzene	%	92	97	90	92	95

svTRH (C10-C40) in Water				
Our Reference	UNITS	372678-21	372678-22	372678-23
Your Reference		04001/GW01	04001/GW02	04001/GW03
Date Sampled		11/02/2025	11/02/2025	11/02/2025
Type of sample		Water	Water	Water
Date extracted	-	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025
TRH C_{10} - C_{14}	µg/L	140	<50	68
TRH C_{15} - C_{28}	µg/L	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	140	<50	70
TRH >C_{10} - C_{16}	µg/L	140	<50	66
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	140	<50	66
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	140	<50	70
Surrogate o-Terphenyl	%	96	86	86

PAHs in Water				
Our Reference	UNITS	372678-21	372678-22	372678-23
Your Reference		04001/GW01	04001/GW02	04001/GW03
Date Sampled		11/02/2025	11/02/2025	11/02/2025
Type of sample		Water	Water	Water
Date extracted	-	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	13/02/2025	13/02/2025	13/02/2025
Naphthalene	µg/L	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	76	66	70

HM in water - dissolved						
Our Reference		372678-17	372678-21	372678-22	372678-23	372678-24
Your Reference	UNITS	04001/RIN	04001/GW01	04001/GW02	04001/GW03	04001/GW-Intra
Date Sampled		11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Arsenic-Dissolved	µg/L	<1	<1	<1	<1	<1
Cadmium-Dissolved	µg/L	<0.1	0.3	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	<1	1	1	2	2
Zinc-Dissolved	µg/L	1	100	5	21	21

Metals in Waters - Acid extractable		
Our Reference		372678-23
Your Reference	UNITS	04001/GW03
Date Sampled		11/02/2025
Type of sample		Water
Date prepared	-	12/02/2025
Date analysed	-	12/02/2025
Phosphorus - Total	mg/L	<0.05

Miscellaneous Inorganics				
Our Reference	UNITS	372678-21	372678-22	372678-23
Your Reference		04001/GW01	04001/GW02	04001/GW03
Date Sampled		11/02/2025	11/02/2025	11/02/2025
Type of sample		Water	Water	Water
Date prepared	-	12/02/2025	12/02/2025	12/02/2025
Date analysed	-	12/02/2025	12/02/2025	12/02/2025
pH	pH Units	6.7	5.8	5.5
Turbidity	NTU	[NA]	[NA]	110
Nitrate as N in water	mg/L	[NA]	[NA]	6.8
Ammonia as N in water	mg/L	[NA]	[NA]	0.057
Total Nitrogen in water	mg/L	[NA]	[NA]	6.8
Total Suspended Solids	mg/L	[NA]	[NA]	120

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-019	Suspended Solids - determined gravimetricially by filtration of the sample. The samples are dried at 104+/-5°C.
Inorg-022	Turbidity - measured nephelometrically using a turbidimeter, in accordance with APHA latest edition, 2130-B.
Inorg-055	Nitrate - determined colourimetrically. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a water extraction.
Inorg-055/062/127	Total Nitrogen - Calculation sum of TKN and oxidised Nitrogen. Alternatively analysed by combustion and chemiluminescence.
Inorg-057	Ammonia - determined colourimetrically, based on APHA latest edition 4500-NH3 F. Waters samples are filtered on receipt prior to analysis. Soils are analysed following a KCl extraction.
Metals-020	Determination of various metals by ICP-AES. Total Phosphate determined stochiometrically from Phosphorus (assumed to be present as Phosphate).
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
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.

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

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	372678-11
Date Extracted	-			12/02/2025	2	12/02/2025	12/02/2025		12/02/2025	12/02/2025
Date Analysed	-			14/02/2025	2	14/02/2025	14/02/2025		14/02/2025	14/02/2025
Dichlorodifluoromethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
trans-1,2-Dichloroethene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,1-Dichloroethane	mg/kg	1	Org-023	<1	2	<1	<1	0	96	89
cis-1,2-Dichloroethene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Bromochloromethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Chloroform	mg/kg	1	Org-023	<1	2	<1	<1	0	98	92
2,2-Dichloropropane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-Dichloroethane	mg/kg	1	Org-023	<1	2	<1	<1	0	90	85
1,1,1-Trichloroethane	mg/kg	1	Org-023	<1	2	<1	<1	0	87	80
1,1-Dichloropropene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Carbon Tetrachloride	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	2	<0.2	<0.2	0	92	85
Dibromomethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-Dichloropropane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Trichloroethene	mg/kg	1	Org-023	<1	2	<1	<1	0	86	79
Bromodichloromethane	mg/kg	1	Org-023	<1	2	<1	<1	0	91	85
trans-1,3-Dichloropropene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
cis-1,3-Dichloropropene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,1,2-Trichloroethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	2	<0.5	<0.5	0	97	90
1,3-Dichloropropane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Dibromochloromethane	mg/kg	1	Org-023	<1	2	<1	<1	0	96	89
1,2-Dibromoethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Tetrachloroethene	mg/kg	1	Org-023	<1	2	<1	<1	0	90	84
1,1,1,2-Tetrachloroethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Chlorobenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	89	84
Bromoform	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
m+p-Xylene	mg/kg	2	Org-023	<2	2	<2	<2	0	91	87
Styrene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,1,2,2-Tetrachloroethane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	372678-11
o-Xylene	mg/kg	1	Org-023	<1	2	<1	<1	0	93	88
1,2,3-Trichloropropane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Isopropylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Bromobenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
n-Propylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
2-Chlorotoluene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
4-Chlorotoluene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,3,5-Trimethylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
tert-Butylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,4-Trimethylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,3-Dichlorobenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
sec-Butylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,4-Dichlorobenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
4-Isopropyltoluene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-Dichlorobenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
n-Butylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2-Dibromo-3-chloropropane	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,4-Trichlorobenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
1,2,3-Trichlorobenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	95	2	92	92	0	93	92
Surrogate aaa-Trifluorotoluene	%		Org-023	91	2	79	86	8	91	88
Surrogate Toluene-d_8	%		Org-023	100	2	98	97	1	99	98
Surrogate 4-Bromofluorobenzene	%		Org-023	97	2	97	97	0	99	99

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date Extracted	-			[NT]	15	12/02/2025	12/02/2025		[NT]	[NT]
Date Analysed	-			[NT]	15	17/02/2025	17/02/2025		[NT]	[NT]
Dichlorodifluoromethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Chloromethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Vinyl Chloride	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Bromomethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Chloroethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Trichlorofluoromethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,1-Dichloroethene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
trans-1,2-Dichloroethene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,1-Dichloroethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
cis-1,2-Dichloroethene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Bromochloromethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Chloroform	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
2,2-Dichloropropane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,2-Dichloroethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,1,1-Trichloroethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,1-Dichloropropene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Cyclohexane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Carbon Tetrachloride	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	15	<0.2	<0.2	0	[NT]	[NT]
Dibromomethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,2-Dichloropropane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Trichloroethene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Bromodichloromethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
trans-1,3-Dichloropropene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
cis-1,3-Dichloropropene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,1,2-Trichloroethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	15	<0.5	<0.5	0	[NT]	[NT]
1,3-Dichloropropane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Dibromochloromethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,2-Dibromoethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Tetrachloroethene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,1,1,2-Tetrachloroethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Chlorobenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Bromoform	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
m+p-Xylene	mg/kg	2	Org-023	[NT]	15	<2	<2	0	[NT]	[NT]
Styrene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,1,2,2-Tetrachloroethane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,2,3-Trichloropropane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Isopropylbenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Bromobenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
n-Propylbenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
2-Chlorotoluene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
4-Chlorotoluene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,3,5-Trimethylbenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
tert-Butylbenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,2,4-Trimethylbenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,3-Dichlorobenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
sec-Butylbenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,4-Dichlorobenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
4-Isopropyltoluene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,2-Dichlorobenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
n-Butylbenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,2-Dibromo-3-chloropropane	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,2,4-Trichlorobenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
1,2,3-Trichlorobenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	[NT]	15	95	95	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	15	92	93	1	[NT]	[NT]
Surrogate Toluene-d_8	%		Org-023	[NT]	15	101	101	0	[NT]	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	[NT]	15	97	96	1	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	372678-11
Date extracted	-			12/02/2025	2	12/02/2025	12/02/2025		12/02/2025	12/02/2025
Date analysed	-			14/02/2025	2	14/02/2025	14/02/2025		14/02/2025	14/02/2025
TRH C_6 - C_9	mg/kg	25	Org-023	<25	2	<25	<25	0	92	87
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	2	<25	<25	0	92	87
Benzene	mg/kg	0.2	Org-023	<0.2	2	<0.2	<0.2	0	92	85
Toluene	mg/kg	0.5	Org-023	<0.5	2	<0.5	<0.5	0	97	90
Ethylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	89	84
m+p-xylene	mg/kg	2	Org-023	<2	2	<2	<2	0	91	87
o-Xylene	mg/kg	1	Org-023	<1	2	<1	<1	0	93	88
Naphthalene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	91	2	79	86	8	91	88

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]	15	12/02/2025	12/02/2025		[NT]	[NT]
Date analysed	-			[NT]	15	17/02/2025	17/02/2025		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	15	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	15	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	15	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	15	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	15	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	15	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	15	92	93	1	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	372678-11
Date extracted	-			12/02/2025	2	12/02/2025	12/02/2025		12/02/2025	12/02/2025
Date analysed	-			15/02/2025	2	15/02/2025	15/02/2025		15/02/2025	15/02/2025
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	2	<50	<50	0	78	80
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	2	<100	<100	0	80	80
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	2	<100	<100	0	100	90
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	2	<50	<50	0	78	80
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	2	<100	<100	0	80	80
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	2	<100	<100	0	100	90
Surrogate o-Terphenyl	%		Org-020	86	2	88	77	13	78	76

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	15	12/02/2025	12/02/2025		[NT]	[NT]
Date analysed	-			[NT]	15	15/02/2025	15/02/2025		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	[NT]	15	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	[NT]	15	<100	<100	0	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	[NT]	15	<100	<100	0	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	[NT]	15	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	[NT]	15	<100	<100	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	[NT]	15	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	15	84	73	14	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	372678-11
Date extracted	-			12/02/2025	2	12/02/2025	12/02/2025		12/02/2025	12/02/2025
Date analysed	-			14/02/2025	2	14/02/2025	14/02/2025		14/02/2025	14/02/2025
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	66	66
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	62	60
Fluorene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	74	76
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	82	82
Anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	64	66
Pyrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	68	74
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	76	80
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	2	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	2	<0.05	<0.05	0	70	86
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	78	2	76	78	3	71	75

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	15	12/02/2025	12/02/2025		[NT]	[NT]
Date analysed	-			[NT]	15	14/02/2025	14/02/2025		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	15	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	15	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	15	63	68	8	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			12/02/2025	[NT]	[NT]	[NT]	[NT]	12/02/2025	[NT]
Date analysed	-			18/02/2025	[NT]	[NT]	[NT]	[NT]	18/02/2025	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	70	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	68	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	74	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	85	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			12/02/2025	[NT]	[NT]	[NT]	[NT]	12/02/2025	[NT]
Date analysed	-			18/02/2025	[NT]	[NT]	[NT]	[NT]	18/02/2025	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	75	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	372678-11
Date prepared	-			14/02/2025	2	12/02/2025	12/02/2025		12/02/2025	12/02/2025
Date analysed	-			14/02/2025	2	14/02/2025	14/02/2025		14/02/2025	14/02/2025
Arsenic	mg/kg	4	Metals-020	<4	2	<4	<4	0	99	89
Cadmium	mg/kg	0.4	Metals-020	<0.4	2	<0.4	<0.4	0	89	89
Chromium	mg/kg	1	Metals-020	<1	2	25	27	8	89	89
Copper	mg/kg	1	Metals-020	<1	2	2	2	0	88	92
Lead	mg/kg	1	Metals-020	<1	2	41	38	8	93	92
Mercury	mg/kg	0.1	Metals-021	<0.1	2	<0.1	0.1	0	103	100
Nickel	mg/kg	1	Metals-020	<1	2	12	11	9	93	93
Zinc	mg/kg	1	Metals-020	<1	2	130	150	14	91	90

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	15	12/02/2025	12/02/2025		[NT]	[NT]
Date analysed	-			[NT]	15	14/02/2025	14/02/2025		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	15	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	15	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	15	3	3	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	15	<1	<1	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	15	7	8	13	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	15	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	15	<1	<1	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	15	1	1	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			13/02/2025	1	13/02/2025	13/02/2025		13/02/2025	[NT]
Date analysed	-			13/02/2025	1	13/02/2025	13/02/2025		13/02/2025	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	1	7.5	7.4	1	103	[NT]

QUALITY CONTROL: CEC					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	372678-5
Date prepared	-			17/02/2025	[NT]	[NT]	[NT]	[NT]	17/02/2025	17/02/2025
Date analysed	-			17/02/2025	[NT]	[NT]	[NT]	[NT]	17/02/2025	17/02/2025
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	92	109
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	98	88
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	93	90
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	88	82

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date Extracted	-			17/02/2025	[NT]	[NT]	[NT]	[NT]	17/02/2025	[NT]
Date Analysed	-			18/02/2025	[NT]	[NT]	[NT]	[NT]	18/02/2025	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	87	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Dibromomethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Bromoform	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	89	[NT]
Styrene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	121	[NT]
Surrogate Toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	116	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	94	[NT]	[NT]	[NT]	[NT]	111	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			17/02/2025	[NT]	[NT]	[NT]	[NT]	17/02/2025	[NT]
Date analysed	-			18/02/2025	[NT]	[NT]	[NT]	[NT]	18/02/2025	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	89	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	89	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	89	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	104	[NT]	[NT]	[NT]	[NT]	121	[NT]
Surrogate Toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	116	[NT]
Surrogate 4-Bromofluorobenzene	%		Org-023	94	[NT]	[NT]	[NT]	[NT]	111	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			12/02/2025	[NT]	[NT]	[NT]	[NT]	12/02/2025	[NT]
Date analysed	-			15/02/2025	[NT]	[NT]	[NT]	[NT]	14/02/2025	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	79	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	76	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	115	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	79	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	76	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	115	[NT]
Surrogate o-Terphenyl	%		Org-020	86	[NT]	[NT]	[NT]	[NT]	116	[NT]

QUALITY CONTROL: PAHs in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			12/02/2025	[NT]	[NT]	[NT]	[NT]	12/02/2025	[NT]
Date analysed	-			13/02/2025	[NT]	[NT]	[NT]	[NT]	13/02/2025	[NT]
Naphthalene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	73	[NT]
Fluorene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Anthracene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	75	[NT]
Pyrene	µg/L	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[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]	91	[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]	84	[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	68	[NT]	[NT]	[NT]	[NT]	80	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	372678-22
Date prepared	-			14/02/2025	21	14/02/2025	14/02/2025		14/02/2025	14/02/2025
Date analysed	-			14/02/2025	21	14/02/2025	14/02/2025		14/02/2025	14/02/2025
Arsenic-Dissolved	µg/L	1	Metals-022	<1	21	<1	<1	0	99	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	21	0.3	0.3	0	93	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	21	<1	<1	0	104	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	21	<1	<1	0	98	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	21	<1	<1	0	91	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	21	<0.05	<0.05	0	117	89
Nickel-Dissolved	µg/L	1	Metals-022	<1	21	1	1	0	99	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	21	100	96	4	100	[NT]

QUALITY CONTROL: Metals in Waters - Acid extractable						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			12/02/2025	23	12/02/2025	12/02/2025		12/02/2025	[NT]
Date analysed	-			12/02/2025	23	12/02/2025	12/02/2025		12/02/2025	[NT]
Phosphorus - Total	mg/L	0.05	Metals-020	<0.05	23	<0.05	<0.05	0	113	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			12/02/2025	[NT]	[NT]	[NT]	[NT]	12/02/2025	[NT]
Date analysed	-			12/02/2025	[NT]	[NT]	[NT]	[NT]	12/02/2025	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]
Turbidity	NTU	0.1	Inorg-022	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Nitrate as N in water	mg/L	0.005	Inorg-055	<0.005	[NT]	[NT]	[NT]	[NT]	104	[NT]
Ammonia as N in water	mg/L	0.005	Inorg-057	<0.005	[NT]	[NT]	[NT]	[NT]	99	[NT]
Total Nitrogen in water	mg/L	0.1	Inorg-055/062/127	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Total Suspended Solids	mg/L	5	Inorg-019	<5	[NT]	[NT]	[NT]	[NT]	97	[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

Dissolved Metals: no filtered, preserved sample was received, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.
Note: there is a possibility some elements may be underestimated.

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 372678-3, 4, 6, 8, 9, 12, 14 were sub-sampled from jars provided by the client.

coc: 11/02/2025 1636

EBG Environmental Geoscience

POST: PO Box 5069, Gwandalan NSW 2259
MOB: +61 (0)419 997 778
EMAIL: contact@ebgroup.com.au
WEBSITE: www.ebgroup.com.au

#372678
11/2/25
C11

CHAIN OF CUSTODY

PROJECT NAME: Stage 2 Detailed Site Investigation
ADDRESS: 154-158 Pacific Parade, Dee Why NSW
JOB NO: EBG-04001.Stage2.DSI.02.25.R00
CONTACT: Michael Edwards
REPORT TO: michael@ebgroup.com.au
PRIOR STORAGE: Esky / Fridge / Ice

PAGE 1 OF 1 (Inter Lab Duplicate)

TO: Envirolab Services
MELBOURNE

CONTACT: T: 0419 997 778
E: michael@ebgroup.com.au

Sample Information				Tests Required											Comments
Sample ID	Date Sampled	Sampled By	Sample Type	Inorganics		Organics					Cont. Suites / Other				Provide as much information as possible
				Metals x8	Pb	BTEX	TRH	PAHs	VOCs	pH	Combo 3	Combo 3 + Asbestos	Combo 5 + Asbestos	CEC	
1 04001/InterDup	11/02/25	SM	SOIL	X											
2 04001/GW-Inter	11/02/25	ME	WATER	X											
04001/															
04001/															
04001/															
04001/															
04001/															
04001/															
04001/															
04001/															

Envirolab Services
25 Research Drive
Croydon South VIC 3136
Ph: (03) 9763 2500

Job No: MUB02449
Date Received: 13/02/25
Time Received: 1:45
Received By: JJ
Temp: Cool/Ambient 21.4°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished By (Company): EBG Environmental / ELS Sydney	Received By (Company): ELS SYD	Turnaround Time:	24 hour
Print Name: Michael Edwards / Tony Trinh	Print Name: Christine Ho		24-36 hours
Date and Time: 09/02/25 / 12/02/25 11:48am	Date and Time: 11/2/25		36-48 hours
Signature: Michael Edwards	Signature:		3 days
			Standard X

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph +61 3 9763 2500
melbourne@envirolab.com.au
www.envirolab.com.au

Sample Receipt Advice MGB0249

Client Details

Client	Edwards Blasche Group
Attention	Michael Edwards

Sample Login Details

Your Reference	EBG-04001.Stage2.DSI.02.25.R00
Envirolab Reference	MGB0249
Date Sample Received	13/02/2025
Date Instructions Received	13/02/2025
Date Final Results Expected	19/02/2025

Sample Condition

Samples received in appropriate condition for analysis	Yes
Number of Samples	1 Soil, 1 Water
Turnaround Time	4 Days
Temperatures / Cooling Methods	21.4°C Ice Pack

Additional Info

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

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

Where no sampling date has been supplied for some or all samples, the date of sample receipt has been used as the associated sampling date. The sampling dates are used to assess compliance to recommended Technical Holding Times.

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).

Please direct any queries to:

Chris De Luca

Phone	03 9763 2500
Email	cdeluca@envirolab.com.au

Tianna Milburn

Phone	03 9763 2500
Email	tmilburn@envirolab.com.au

Analysis underway, details on the following page

Sample Receipt Advice MGB0249

Analysis Grid

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

	Metals 8	Total Metals (LL)	Moisture
MGB0249-01 Soil | 11/02/2025 04001/InterDup	•		•
MGB0249-02 Water | 11/02/2025 04001/GW-Inter		•	

Suite Details

Suite Name	Suite Analyses
Metals 8 |Soil	As, Cd, Cr, Cu, Hg, Ni, Pb, Zn
Metals 8 -Total (LL) |Water	As - Total (LL), Cd - Total (LL), Cr - Total (LL), Cu - Total (LL), Hg - Total, Ni - Total (LL), Pb - Total (LL), Zn - Total (LL)
Total Metals (LL) |Water	Metals 8 -Total (LL)

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph +61 3 9763 2500
melbourne@envirolab.com.au
www.envirolab.com.au

Certificate of Analysis MGB0249

Client Details

Client	Edwards Blasche Group
Contact	Michael Edwards
Address	PO Box 5069, GWANDALAN, NSW, 2259

Sample Details

Your Reference	EBG-04001.Stage2.DSI.02.25.R00
Number of Samples	1 Soil, 1 Water
Date Samples Received	13/02/2025
Date Instructions Received	13/02/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for soils and on an as received basis for other matrices.

Report Details

Date Results Requested by	19/02/2025
Date of Issue	19/02/2025

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

Authorisation Details

Results Approved By	Chris De Luca, Lab Manager Tianna Milburn, Operations Manager
Laboratory Manager	Chris De Luca

Certificate of Analysis MGB0249

Samples in this Report

Envirolab ID	Sample ID	Matrix	Date Sampled	Date Received
MGB0249-01	04001/InterDup	Soil	11/02/2025	13/02/2025
MGB0249-02	04001/GW-Inter	Water	11/02/2025	13/02/2025

Certificate of Analysis MGB0249

Acid Extractable Metals (Soil)

Envirolab ID	Units	PQL	MGB0249-01
Your Reference			04001/InterDup
Date Sampled			11/02/2025
Arsenic	mg/kg	4.0	<4.0
Cadmium	mg/kg	0.40	0.72
Chromium	mg/kg	1.0	9.0
Copper	mg/kg	1.0	190
Mercury	mg/kg	0.10	0.11
Nickel	mg/kg	1.0	5.3
Lead	mg/kg	1.0	90
Zinc	mg/kg	1.0	410

Acid Extractable Low Level Metals (Water)

Envirolab ID	Units	PQL	MGB0249-02
Your Reference			04001/GW-Inter
Date Sampled			11/02/2025
Arsenic	µg/L	1.0	<1.0
Cadmium	µg/L	0.10	0.12
Chromium	µg/L	1.0	1.8
Copper	µg/L	1.0	2.6
Mercury	µg/L	0.050	<0.050
Nickel	µg/L	1.0	3.2
Lead	µg/L	1.0	3.0
Zinc	µg/L	1.0	34

Certificate of Analysis MGB0249

Inorganics - Moisture (Soil)

Envirolab ID	Units	PQL	MGB0249-01
Your Reference			04001/InterDup
Date Sampled			11/02/2025
Moisture	%	0.10	3.9

Method Summary

Method ID	Methodology Summary
INORG-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
METALS-020	Determination of various metals by ICP-OES.
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 and/or anion/cation forms (e.g. FeO, PbO, ZnO, BO3) are determined stoichiometrically from the base metal concentration.

Result Definitions

Identifier	Description
NR	Not reported
NEPM	National Environment Protection Measure
NS	Not specified
LCS	Laboratory Control Sample
RPD	Relative Percent Difference
>	Greater than
<	Less than
PQL	Practical Quantitation Limit
INS	Insufficient sample for this test
NA	Test not required
NT	Not tested
DOL	Samples rejected due to particulate overload (air filters only)
RFD	Samples rejected due to filter damage (air filters only)
RUD	Samples rejected due to uneven deposition (air filters only)
##	Indicates a laboratory acceptance criteria outlier, for further details, see Result Comments and/or QC Comments

Quality Control Definitions

Blank

This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, and is determined by processing solvents and reagents in exactly the same manner as for samples.

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.

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.

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.

Duplicate

This is the complete duplicate analysis of a sample from the process batch. The sample selected should be one where the analyte concentration is easily measurable.

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.

General Acceptance Criteria (GAC) - Analyte specific criteria applies for some analytes and is reflected in QC recovery tables.

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 QAQC tables for details (available on request); <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; 60-140% for organics (+/-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 typically insufficient in order to satisfy laboratory QA/QC protocols.

Miscellaneous Information

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. We have taken the sampling date as being the date received at the laboratory.

Two significant figures are reported for the majority of tests and with a high degree of confidence, for results <10*PQL, the second significant figure may be in doubt i.e. has a relatively high degree of uncertainty and is provided for information only.

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 or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS where sediment/solids are included by default.

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

Air volume measurements are not covered by Envirolab's NATA accreditation.

Data Quality Assessment Summary MGB0249

Client Details

Client	Edwards Blasche Group
Your Reference	EBG-04001.Stage2.DSI.02.25.R00
Date Issued	19/02/2025

Recommended Holding Time Compliance

No recommended holding time exceedances

Quality Control and QC Frequency

QC Type	Compliant	Details
Blank	Yes	No Outliers
LCS	Yes	No Outliers
Duplicates	Yes	No Outliers
Matrix Spike	No	Matrix Spike Outliers Exist - See detailed list below
Surrogates / Extracted Internal Standards	Yes	No Outliers
QC Frequency	Yes	No Outliers

Surrogates/Extracted Internal Standards, Duplicates and/or Matrix Spikes are not always relevant/applicable to certain analyses and matrices. Therefore, said QC measures are deemed compliant in these situations by default. See Laboratory Acceptance Criteria for more information

Data Quality Assessment Summary MGB0249

Recommended Holding Time Compliance

Analysis	Sample Number(s)	Date Sampled	Date Extracted	Date Analysed	Compliant
Metals | Soil	1	11/02/2025	14/02/2025	17/02/2025	Yes
Metals-Hg | Soil	1	11/02/2025	14/02/2025	17/02/2025	Yes
Total Metals (LL) | Water	2	11/02/2025	17/02/2025	18/02/2025	Yes
Total Metals (LL)-Hg | Water	2	11/02/2025	17/02/2025	18/02/2025	Yes
Moisture | Soil	1	11/02/2025	14/02/2025	17/02/2025	Yes

Outliers: Matrix Spike

METALS-021|Acid Extractable Low Level Metals (Water)| Batch BGB2598

Sample ID	Analyte	% Limits	% Recovery
BGB2598-MS1#	Mercury	70 - 130	##[1]

Quality Control MGB0249

METALS-020|Acid Extractable Metals (Soil) | Batch BGB2412

Analyte	Units	PQL	Blank	DUP1 BGB2412-DUP1# Samp | QC | RPD %	DUP2 BGB2412-DUP2# Samp | QC | RPD %	LCS %	Spike % BGB2412-MS1#
Arsenic	mg/kg	4.0	<4.0	<4.0 | <4.0 | [NA]		99.6	70.4
Cadmium	mg/kg	0.40	<0.40	<0.40 | <0.40 | [NA]		96.7	75.6
Chromium	mg/kg	1.0	<1.0	67.1 | 49.8 | 29.6		95.8	73.7
Copper	mg/kg	1.0	<1.0	3.50 | 3.57 | [NA]		96.4	88.9
Lead	mg/kg	1.0	<1.0	11.6 | 9.99 | 15.2		94.9	76.5
Mercury	mg/kg	0.10	<0.10	<0.10 | <0.10 | [NA]		104	87.3
Nickel	mg/kg	1.0	<1.0	8.87 | 7.65 | 14.8		94.3	73.7
Zinc	mg/kg	1.0	<1.0	7.94 | 8.02 | 0.928		94.4	75.0

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-021|Acid Extractable Low Level Metals (Water) | Batch BGB2598

Analyte	Units	PQL	Blank	DUP1 BGB2598-DUP1# Samp | QC | RPD %	DUP2 BGB2598-DUP2# Samp | QC | RPD %	LCS %	Spike % BGB2598-MS1#
Mercury	µg/L	0.050	<0.050	<0.050 | <0.050 | [NA]	<0.050 | <0.050 | [NA]	115	##[1]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

METALS-022|Acid Extractable Low Level Metals (Water) | Batch BGB2600

Analyte	Units	PQL	Blank	DUP1 MGB0249-02 Samp | QC | RPD %	LCS %	Spike % BGB2600-MS1#
Arsenic	µg/L	1.0	<1.0	<1.0 | <1.0 | [NA]	101	102
Cadmium	µg/L	0.10	<0.10	0.120 | 0.100 | [NA]	105	103
Chromium	µg/L	1.0	<1.0	1.78 | 1.80 | [NA]	101	99.3
Copper	µg/L	1.0	<1.0	2.56 | 2.47 | [NA]	103	95.3
Lead	µg/L	1.0	<1.0	2.98 | 2.98 | [NA]	98.4	94.7
Nickel	µg/L	1.0	<1.0	3.23 | 3.48 | [NA]	101	99.3
Zinc	µg/L	1.0	<1.0	34.0 | 33.7 | 0.768	103	99.8

Analyte	Units	PQL	Blank	LCS %
Arsenic	µg/L	1.0	<1.0	[NA]
Cadmium	µg/L	0.10	<0.10	[NA]
Chromium	µg/L	1.0	<1.0	[NA]
Copper	µg/L	1.0	<1.0	[NA]
Lead	µg/L	1.0	<1.0	[NA]
Nickel	µg/L	1.0	<1.0	[NA]
Zinc	µg/L	1.0	<1.0	[NA]

INORG-008|Inorganics - Moisture (Soil) | Batch BGB2410

Analyte	Units	PQL	Blank	DUP1 BGB2410-DUP1# Samp | QC | RPD %	DUP2 BGB2410-DUP2# Samp | QC | RPD %	LCS %
Moisture	%	0.1		15.7 | 14.2 | 10.6	6.47 | 6.71 | 3.64	[NA]

The QC reported was not specifically part of this workorder but formed part of the QC process batch.

QC Comments

Identifier	Description
[1]	Spike recovery is not applicable due to the relatively high analyte background in the sample (>3* spike level). However, the LCS recovery is within acceptance criteria.

APPENDIX E :

UPSS MONITORING Q1 2018 DEE WHY (1 THE STAND) - WSP

UNITED PETROLEUM PTY LTD

13 APRIL, 2018

CONFIDENTIAL

ADDRESS: LEVEL 27, ERNST & YOUNG CENTRE
680 GEORGE STREET, SYDNEY, NSW, 2000
ABN: 80078 004 798

UPSS MONITORING Q1 2018

DEE WHY (THE STRAND)

1 THE STRAND
DEE WHY, NSW
SITE ID: 2220

Site Identification / Description	
ID:	2220
Address:	1 The Strand
Suburb:	Dee Why
Client:	United Petroleum Pty Ltd
Project:	UPSS Groundwater Program 2018 (Q1)

Groundwater Monitoring Summary	
No. of wells gauged :	12
No. of wells not gauged:	0
No. of wells sampled:	6
Sample collection method:	Hydrasleeve™
GW flow direction:	North-east based on the topography and nearest surface water receptor.
Closest inferred sensitive landuse:	Residential properties to the north, west and south. Commercial properties to the east.
Nearest surface water:	Pacific Ocean located 120 m to the north-east of the site.

Site Background

WSP has conducted bi-annual groundwater monitoring at the site since 2012 in accordance with UPSS Regulations.

Monitoring wells MW07, MW08, MW09 and MW10 were replaced by JBS&G in November 2016 and have been identified as MW07A, MW08A, MW09A and MW10A for reporting purposes.

Hydrocarbon impacts in on-site wells MW01-MW05 have generally exceeded the adopted assessment criteria since 1999/2000.

Discussion of Results

Benzene and toulene concentrations in wells MW02, MW04 and MW05 exceeded the marine water ecosystem assessment criteria. Ethylbenzene and xylenes concentrations in well MW02, MW04, MW05 and MW10A exceeded the freshwater ecosystem assessment criteria.

TRH and BTEXN concentrations were below the laboratory limit of reporting in wells MW03, which is not consistent with historical results.

TRH and BTEXN concentrations were detected in well MW01 however all were below the adopted assessment criteria.

Hydrocarbon concentrations include both light end and mid-range TPH fractions indicating a petrol and potentially a diesel source.

Hydrocarbon concentrations in all on-site wells are below the commercial/industrial health screening levels.

The extent of hydrocarbon impacts has generally been determined downgradient of the site with the exception of impacts noted in well MW10A.

Hydrocarbon concentrations in well MW10A located adjacent to the residential property are below the residential health screening levels. Given this and there are no occupants on the ground floor as this is a carpark, there is no reason to believe there is an unacceptable risk.

LNAPL was been detected in well MW04 at an apparent thickness of 0.145 metres. This may be attributed to an increase in depth to the water table. LNAPL has historically been detected in wells MW02 and MW04 which are located down-gradient to the sales building.

Conclusions and Recommendations

Continue to monitor hydrocarbon concentrations in well MW10A. Should concentrations increase then consider remediation options.

Continue 6-monthly groundwater monitoring as per UPSS Regulations.

Report Summary			
Report Date:	13-Apr-18	**Date Gauged:**	14-Feb-18
Reported By:	Amy Wray 	**Reviewed By:**	Andrew Hill 

Groundwater Gauging Data					
ID	Date Gauged	Well Depth (m)	Depth to Product (m)	Product Thickness (m)	Depth to Water (m)
MW01	07-Jan-03	5.33	-	-	3.540
	20-Aug-12	5.33	-	-	2.364
	03-Apr-13	5.31	-	-	2.940
	29-Jan-14	5.33	-	-	3.435
	31-Jul-14	5.33	-	-	3.320
	29-Jan-15	5.27	-	-	3.119
	01-Sep-15	5.30	-	-	2.842
	11-Feb-16	5.30	-	-	2.665
	08-Aug-16	5.38	-	-	2.488
	24-Nov-16	5.27	-	-	3.054
	29-Jan-17	5.40			3.413
	22-Aug-17	5.26	-	-	3.081
	14-Feb-18	5.24	-	-	3.968
MW02	07-Jan-03	4.98	-	-	3.380
	20-Aug-12	4.98	2.439	0.054	2.493
	03-Apr-13	4.98	2.798	0.413	3.211
	29-Jan-14	4.48	3.072	0.988	4.060
	31-Jul-14	4.48	3.531	0.550	4.081
	29-Jan-15	4.48	2.901	0.198	3.099
	01-Sep-15	4.97	-	-	2.799
	11-Feb-16	4.97	2.645	0.003	2.648
	08-Aug-16	4.97	-	-	2.495
	24-Nov-16	4.96	-	-	2.972
	29-Jan-17	4.97	-	-	3.248
	22-Aug-17	4.79	-	-	3.032
	14-Feb-18	4.78	-	-	3.786
MW03	07-Jan-03	4.45	-	-	3.180
	03-Apr-13	4.45	-	-	2.734
	29-Jan-14	4.38	-	-	3.110
	31-Jul-14	4.38	-	-	3.436
	29-Jan-15	4.38	-	-	2.757
	01-Sep-15	4.44	-	-	2.649
	11-Feb-16	4.44	-	-	2.448
	08-Aug-16	4.22	-	-	2.333
	24-Nov-16	4.44	-	-	2.798
	29-Jan-17	4.22	-	-	3.062
	22-Aug-17	4.46	-	-	2.831
	14-Feb-18	4.46	-	-	3.541
MW04	07-Jan-03	4.28	-	-	3.190
	03-Apr-13	4.28	2.410	1.239	3.649
	29-Jan-14	4.25	2.920	0.865	3.785
	31-Jul-14	4.25	3.199	0.856	4.055
	29-Jan-15	4.25	2.525	0.960	3.485
	01-Sep-15	4.25	2.691	0.065	2.626
	11-Feb-16	4.25	2.500	0.003	2.503
	08-Aug-16	4.21	-	-	2.330
	24-Nov-16	4.15	-	-	2.798
	29-Jan-17	4.21	-	-	3.065
	22-Aug-17	4.17	-	-	2.830
	14-Feb-18	4.18	3.564	0.145	3.709

Groundwater Gauging Data					
ID	Date Gauged	Well Depth (m)	Depth to Product (m)	Product Thickness (m)	Depth to Water (m)
MW05	07-Jan-03	4.26	-	-	2.840
	20-Aug-12	4.34	-	-	2.301
	03-Apr-13	4.58	-	-	2.691
	29-Jan-14	4.58	-	-	3.092
	31-Jul-14	4.58	-	-	3.068
	29-Jan-15	4.17	-	-	2.372
	01-Sep-15	4.16	-	-	2.420
	11-Feb-16	4.16	-	-	2.285
	08-Aug-16	4.16	-	-	2.110
	24-Nov-16	4.02	-	-	2.506
	29-Jan-17	4.16	-	-	2.734
	22-Aug-17	4.06	-	-	2.521
	14-Feb-18	4.06	-	-	3.159
MW06	07-Jan-03	4.34	-	-	3.110
	03-Apr-13	4.26	-	-	2.443
	29-Jan-14	4.26	-	-	2.816
	31-Jul-14	4.26	-	-	3.435
	29-Jan-15	4.54	-	-	2.649
	01-Sep-15	4.54	-	-	2.586
	11-Feb-16	4.54	-	-	2.448
	08-Aug-16	4.60	-	-	2.300
	24-Nov-16	4.50	-	-	2.739
	29-Jan-17	4.60	-	-	3.008
	22-Aug-17	4.51	-	-	2.783
	14-Feb-18	4.53	-	-	3.601
MW07A	07-Jan-03	2.99	-	-	2.990
	20-Aug-12	4.43	-	-	2.042
	20-Aug-14	4.43	-	-	2.151
	24-Nov-16	6.03	-	-	2.716
	29-Jan-17	4.43	-	-	2.953
	22-Aug-17	6.03	-	-	2.712
	14-Feb-18	6.01	-	-	3.475
MW08A	07-Jan-03	2.93	-	-	2.930
	20-Aug-12	4.79	-	-	2.035
	31-Jul-14	4.26	-	-	3.435
	24-Nov-16	5.38	-	-	2.572
	29-Jan-17	4.26	-	-	2.723
	22-Aug-17	5.40	-	-	2.593
	14-Feb-18	5.37	-	-	3.282
MW09A	31-Jul-14	4.26	-	-	3.435
	24-Nov-16	5.25	-	-	2.621
	29-Jan-17	5.25	-	-	2.823
	22-Aug-17	5.27	-	-	2.646
	14-Feb-18	5.25	-	-	3.261
MW10A	31-Jul-15	4.26	-	-	3.435
	24-Nov-16	5.25	-	-	2.681
	29-Jan-17	5.25	-	-	2.872
	22-Aug-17	5.40	-	-	2.685
	14-Feb-18	5.25	-	-	3.251

Groundwater Gauging Data					
ID	Date Gauged	Well Depth (m)	Depth to Product (m)	Product Thickness (m)	Depth to Water (m)
MW11	07-Jan-03	4.43	-	-	3.190
	20-Aug-12	4.43	-	-	2.042
	03-Apr-13	4.26	-	-	2.862
	29-Jan-14	4.26	-	-	3.152
	31-Jul-14	4.26	-	-	3.435
	29-Jan-15	4.27	-	-	2.891
	01-Sep-15	4.26	-	-	2.812
	11-Feb-16	4.26	-	-	2.667
	08-Aug-16	4.28	-	-	2.495
	24-Nov-16	4.25	-	-	2.920
	29-Jan-17	4.25	-	-	3.165
	22-Aug-17	4.28	-	-	2.921
	14-Feb-18	4.27	-	-	3.420
MW12	07-Jan-03	4.79	-	-	3.080
	20-Aug-12	4.79	-	-	2.035
	03-Apr-13	4.79	-	-	2.905
	29-Jan-14	4.79	-	-	3.231
	31-Jul-14	4.26	-	-	3.435
	29-Jan-15	4.77	-	-	2.803
	01-Sep-15	4.68	-	-	2.618
	11-Feb-16	4.68	-	-	2.449
	08-Aug-16	4.72	-	-	2.250
	24-Nov-16	4.57	-	-	2.786
	29-Jan-17	4.72	-	-	3.146
	22-Aug-17	4.71	-	-	2.779
	14-Feb-18	4.68	-	-	3.490

Wells MW07, MW08, MW09, MW10 were replaced in November 2016
Ref: Groundwater Monitoring Event and Human Health Risk Assessment (OTEK, 2003)
GME (Parsons Brinckerhoff, 2012)
GME (Parsons Brinckerhoff, 2013)
GME (Parsons Brinckerhoff, Jan 2014)
GME (Parsons Brinckerhoff, Jul 2014)
GME (Parsons Brinckerhoff, Jan 2015)
GME (Parsons Brinckerhoff, Sep 2015)
GME (WSP Parsons Brinckerhoff, Feb 2016)
GME (WSP Parsons Brinckerhoff, Aug 2016)
DSI (JBS&G, Nov 2016)
GME (WSP Parsons Brinckerhoff, Jan 2017)
GME (WSP, Aug 2017)

Groundwater Results												
ID	Date Sampled	SWL (m)	TPH C_6-C_9	TPH C_{10}-C_{36}	F1	F2	B	T	E	m&p-X	o-X	N
Freshwater Ecosystem [1]			-	-	-	-	950	180	80	275	350	16
Marine Ecosystem [2]			-	-			500	180	5	-	-	50
Residential HSL [3] SAND 2-4 metres			-	-	1,000	1,000	800	NL	NL	NL	NL	NL
Commercial HSL [4] SAND 2-4 metres			-	-	NL	NL	5,000	NL	NL	NL	NL	NL
MW01	30-Dec-99	-	250	<50	-	-	96	1	14	6		-
	12-May-00	-	320	<50	-	-	250	1	9	<1	<1	-
	22-Feb-01	-	50	<50	-	-	19	<1	<1	<1	<1	-
	15-Apr-02	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	7-Jan-03	3.540	<20	<50	-	-	<1	<1	<1	<1	<1	-
	20-Aug-12	2.364	2,800	120	-	-	910	15	21	29	<1	1
	29-Jan-14	3.435	1,660	50	870	<100	726	22	22	20	7	<5
	31-Jul-14	3.320	550	<50	470	<100	76	7	3	4	2	<5
	29-Jan-15	3.119	1,080	80	740	<100	322	14	11	<5	<5	<5
	1-Sep-15	2.842	4,000	<450	2,800	130	1,500	<25	110	<50	<25	<25
	11-Feb-16	2.665	1,250	240	830	210	280	5	19	11	3	<5
	08-Aug-16	2.488	620	170	340	160	61	<2	12	5	<2	<5
	24-Nov-16	3.054	260	<100	-	-	17	2	3	2	<1	<10
	30-Jan-17	3.413	400	50	210	<100	34	<2	6	2	<2	<5
	22-Aug-17	3.081	270	130	320	110	4	<2	3	<2	<2	<5
	14-Feb-18	3.968	140	<100	160	<50	5	<3	2	2	<1	<10
MW02	30-Dec-99	-	20,000	2,300	-	-	12,000	3,300	860	2,500		-
	12-May-00	-	8,400	990	-	-	6,500	590	310	790		-
	22-Feb-01	-	1,100	720	-	-	6,500	240	520	660		-
	15-Apr-02	-	3,900	1,500	-	-	2,600	200	500	340	130	-
	7-Jan-03	3.380	280	480	-	-	190	7	11	27	20	-
	31-Jul-14	4.081	196,000	194,000	80,300	692,000	14,900	70,300	4,730	19,300	8,500	464
	1-Sep-15	2.799	120,000	5,600	<50,000	3,000	7,200	58,000	2,400	12,000	4,100	600
	11-Feb-16	2.648	89,300	5,130	35,200	2,920	2,430	35,400	1,340	13,800	4,630	268
	08-Aug-16	2.495	35,500	2,580	11,600	1,110	1,760	14,400	756	5,020	2,190	121
	24-Nov-16	2.972	25,000	5,250	-	-	2,500	2,000	1,200	2,900	1,000	2,300
	30-Jan-17	3.248	89,500	2,330	41,400	1,100	4,860	24,500	1,760	9,110	3,980	195
	22-Aug-17	3.032	51,200	8,060	32,500	3,470	2,940	22,300	1,710	8,250	3,700	120
	14-Feb-18	3.786	60,000	570	33,000	220	2,900	1,900	930	6,500	2,500	<200
MW03	30-Dec-99	-	14,000		-	-	9,100	1,500	870	1,600		-
	12-May-00	-	7,600	3,424	-	-	4,800	1,000	430	1,100		-
	22-Feb-01	-	23,000	3,577	-	-	5,600	3,500	1,500	5,500		-
	15-Apr-02	-	28,000	10,651	-	-	12,000	2,800	2,200	7,200	1,100	-
	7-Jan-03	3.180	32,000	64,037	-	-	8,800	5,600	3,100	10,000	2,600	-
	29-Jan-14	3.110	12,800	3,880	9,360	2,530	2,000	941	490	1,290	520	308
	31-Jul-14	3.436	15,500	2,470	9,720	3,330	2,010	1,430	790	2,510	837	626
	29-Jan-15	2.757	7,520	1,510	5,990	1,400	985	314	177	875	366	194
	1-Sep-15	2.649	18,000	11,000	13,000	7,100	1,600	32,000	1,400	7,600	2,400	150
	11-Feb-16	2.448	9,680	3,520	4,590	2,410	1,210	1,290	530	1,600	606	328
	08-Aug-16	2.333	8,490	2,920	3,520	1,660	813	731	345	1,080	381	289
	24-Nov-16	2.798	9,100	1,000	-	-	1,000	4,700	320	1,300	600	100
	30-Jan-17	3.062	11,600	5,620	3,660	2,930	1,270	1,660	773	2,500	933	434
	22-Aug-17	2.831	17,400	9,340	15,700	5,080	1,520	1,750	833	2,850	916	366
	14-Feb-18	3.541	<20	<100	<20	<50	<1	<1	<1	<2	<1	<10
MW04	12-May-00	-	140	<50	-	-	74	2	6	6		-
	22-Feb-01	-	180	60	-	-	79	<1	3	3		-
	15-Apr-02	-	<20	100	-	-	<1	<1	1	<1	<1	-
	7-Jan-03	3.190	<20	<50	-	-	<1	<1	<1	<1	<1	-
	1-Sep-15	2.626	76,000	2,700	33,000	1,500	3,200	32,000	1,400	7,600	2,400	150
	11-Feb-16	2.503	18,200	3,780	11,200	2,330	532	5,680	322	2,110	958	80
	08-Aug-16	2.330	17,400	1,120	5,920	570	908	7,370	382	1,760	764	58
	24-Nov-16	2.798	9,100	1,000	-	-	230	2,800	230	860	390	<200
	30-Jan-17	3.065	40,000	4,290	18,200	2,300	908	13,200	1,010	4,620	1,940	144
	22-Aug-17	2.830	27,700	1,120	19,700	1,120	697	11,500	809	3,670	1,620	90
	14-Feb-18	3.709	160,000	9,100	86,000	5,600	2,600	62,000	2,200	12,000	4,800	<500
MW05	12-May-00	-	5,400	2,292	-	-	4,600	40	450	210		-
	22-Feb-01	-	800	680	-	-	190	19	110	110		-
	15-Apr-02	-	12,000	4,400	-	-	4,900	980	1,500	3,100	620	-
	7-Jan-03	2.840	11,000	3,000	-	-	3,500	1,600	1,300	2,700	770	-
	20-Aug-12	2.301	2,000	<50	-	-	490	11	16	15		<2
	18-Feb-14	-	21,000	1,740	<20	<100	3,170	5,020	666	1,830	753	163
	31-Jul-14	3.068	8,540	520	4,010	310	1,410	1,680	399	1,200	411	82
	29-Jan-15	2.372	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	1-Sep-15	2.420	15,000	1,600	5,200	1,100	3,100	3,500	380	2,700	540	97
	11-Feb-16	2.285	18,200	1,630	10,500	950	2,910	1,180	728	2,380	698	157
	08-Aug-16	2.110	7,540	1,030	2,370	590	2,220	148	469	1,390	222	93
	24-Nov-16	2.506	12,000	3,520	-	-	3,200	790	670	1,900	290	<100
	30-Jan-17	2.734	6,250	1,140	890	670	2,410	194	492	1,500	46	84
	22-Aug-17	2.521	12,000	1,560	7,600	810	3,450	1,370	767	2,410	204	121
	14-Feb-18	3.159	<1,000	1,100	<1,000	440	1,400	6,400	620	2,800	1,400	<50

Groundwater Results												
ID	Date Sampled	SWL (m)	TPH C_6-C_9	TPH C_{10}-C_{36}	F1	F2	B	T	E	m&p-X	o-X	N
Freshwater Ecosystem [1]			-	-	-	-	**950**	**180**	**80**	**275**	**350**	**16**
Marine Ecosystem [2]			-	-			**500**	**180**	**5**	-	-	**50**
MW06	12-May-00	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	22-Feb-01	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	15-Apr-02	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	7-Jan-03	3.110	<20	20	-	-	<1	<1	<1	<1	<1	-
	18-Feb-14	-	<20	<50	14,400	940	<1	<2	<2	<2	<2	<5
	31-Jul-14	3.435	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	11-Feb-16	2.448	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	24-Nov-16	2.7.9	<20	80	-	-	<1	1	<1	<2	<1	<10
	30-Jan-17	3.008	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	22-Aug-17	2.783	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
MW07A	12-May-00	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	22-Feb-01	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	15-Apr-02	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	7-Jan-03	2.990	<20	<50	-	-	<1	<1	<1	<1	<1	-
	20-Aug-14	2.042	51	<50	-	-	1	<1	<1	<1	<2	-
	24-Nov-16	2.716	<20	70	-	-	<1	<1	<1	<1	<1	<10
	30-Jan-17	2.953	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	22-Aug-17	2.712	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
MW08A	12-May-00	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	22-Feb-01	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	15-Apr-02	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	7-Jan-03	2.930	<20	<50	-	-	<1	<1	<1	<1	<1	-
	24-Nov-16	2.572	<20	80	-	-	<1	<1	<1	<2	<1	<10
	30-Jan-17	2.723	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	22-Aug-17	2.593	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
MW09A	12-May-00	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	22-Feb-01	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	15-Apr-02	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	7-Jan-03	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	24-Nov-16	2.621	<20	<100	-	-	<1	<1	<1	<1	<	<10
	30-Jan-17	2.823	1,920	460	600	220	291	101	**210**	**509**	224	**43**
	22-Aug-17	2.646	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
MW10A	12-May-00	-	<20	<50	-	-	3	<1	1	<1	<1	-
	22-Feb-01	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	15-Apr-02	-	<20	40	-	-	4	<1	<1	<1	<1	-
	7-Jan-03	-	340	160	-	-	220	7	**10**	39	36	-
	24-Nov-16	2.681	460	190	-	-	41	18	**32**	63	30	**20**
	30-Jan-17	2.872	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	22-Aug-17	2.685	240	110	240	<100	26	6	**18**	34	19	6
	14-Feb-18	3.251	1,200	420	820	180	170	31	**130**	320	130	<10
MW11	12-May-00	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	22-Feb-01	-	30	<50	-	-	21	<1	<1	<1	<1	-
	15-Apr-02	-	<20	40	-	-	<1	<1	<1	<1	<1	-
	7-Jan-03	3.190	<20	160	-	-	<1	<1	<1	<1	<1	-
	29-Jan-15	2.891	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	11-Feb-16	2.667	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	24-Nov-16	2.920	<20	80	-	-	<1	<1	<1	<2	<1	<10
	30-Jan-17	3.165	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	22-Aug-17	2.921	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
MW12	12-May-00	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	22-Feb-01	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	15-Apr-02	-	<20	<50	-	-	<1	<1	<1	<1	<1	-
	7-Jan-03	3.080	<20	<50	-	-	<1	<1	<1	<1	<1	-
	29-Jan-15	2.803	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	11-Feb-16	2.449	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	24-Nov-16	2.786	<20	<100	-	-	<1	<1	<1	<2	<1	<10
	30-Jan-17	3.146	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5
	22-Aug-17	2.779	<20	<50	<20	<100	<1	<2	<2	<2	<2	<5

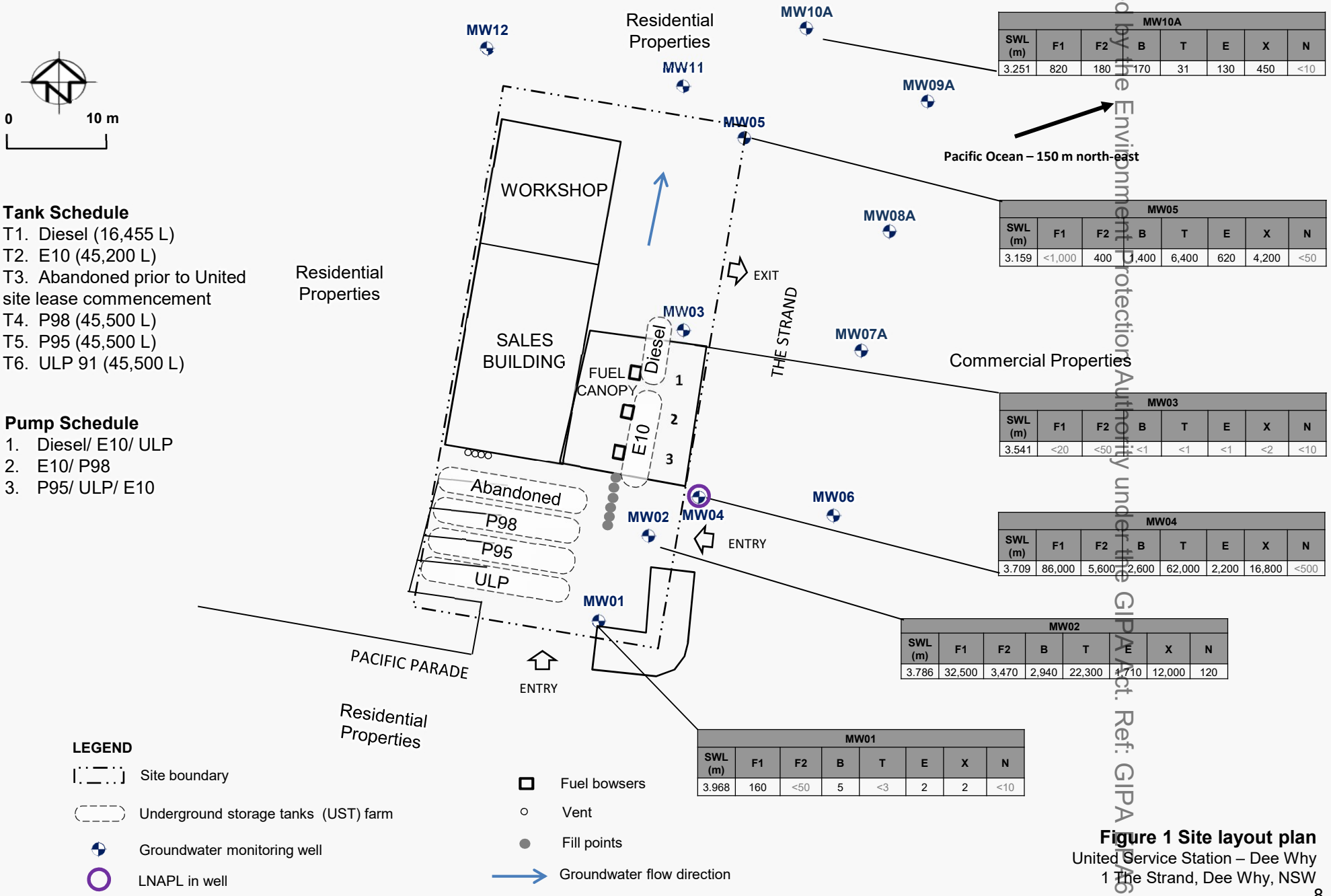
All concentrations expressed as µg/L

[1] ANZECC/ARMCANZ (2000) - trigger values for freshwater ecological, 95% level of protection

[2] ANZECC/ARMCANZ (2000) - trigger values for marine ecosystems, 95% level of protection

[3] NEPM 2013 Schedule B-1 Table 1A(4) Groundwater HSLs for vapour intrusion - HSL D Commercial/industrial in sand

[4] NEPM 2013 Schedule B-1 Table 1A(4) Groundwater HSLs for vapour intrusion - HSL D Residential in sand



MW10A							
SWL (m)	F1	F2	B	T	E	X	N
3.251	820	180	170	31	130	450	<10

MW05							
SWL (m)	F1	F2	B	T	E	X	N
3.159	<1,000	400	3,400	6,400	620	4,200	<50

MW03							
SWL (m)	F1	F2	B	T	E	X	N
3.541	<20	<50	<1	<1	<1	<2	<10

MW04							
SWL (m)	F1	F2	B	T	E	X	N
3.709	86,000	5,600	2,600	62,000	2,200	16,800	<500

MW02							
SWL (m)	F1	F2	B	T	E	X	N
3.786	32,500	3,470	2,940	22,300	1,110	12,000	120

MW01							
SWL (m)	F1	F2	B	T	E	X	N
3.968	160	<50	5	<3	2	2	<10

Figure 1 Site layout plan
United Service Station – Dee Why
1 The Strand, Dee Why, NSW

Certificate of Analysis

WSP Australia P/L NSW
Level 27, Ernst & Young Centre
Sydney
NSW 2001

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Andrew Hill**

Report **584733-W-V2**
Project name UNITED UPSS GME Q1 2018
Project ID PS107652_UNITED_DEE WHY THE STRAND
Received Date Feb 14, 2018

Client Sample ID			[R16]**MW02**	**MW01**	**MW10A**	[R16]**MW05**
Sample Matrix			**Water**	**Water**	**Water**	**Water**
Eurofins | mgt Sample No.			**S18-Fe15291**	**S18-Fe15294**	**S18-Fe15296**	**S18-Fe15297**
Date Sampled			**Feb 14, 2018**	**Feb 14, 2018**	**Feb 14, 2018**	**Feb 14, 2018**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	60	0.14	1.2	< 1
TRH C10-C14	0.05	mg/L	0.57	< 0.05	0.32	1.1
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	0.57	< 0.1	0.42	1.1
BTEX						
Benzene	0.001	mg/L	2.9	0.005	0.17	1.4
Toluene	0.001	mg/L	19	0.002	0.031	6.4
Ethylbenzene	0.001	mg/L	0.93	0.002	0.13	0.62
m&p-Xylenes	0.002	mg/L	6.5	0.002	0.32	2.8
o-Xylene	0.001	mg/L	2.5	< 0.001	0.13	1.4
Xylenes - Total	0.003	mg/L	9.1	< 0.003	0.45	4.3
4-Bromofluorobenzene (surr.)	1	%	90	84	83	75
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.01	mg/L	< 0.2	< 0.01	< 0.01	< 0.05
TRH C6-C10	0.02	mg/L	65	0.17	1.6	< 1
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	33	0.16	0.82	< 1
TRH >C10-C16	0.05	mg/L	0.22	< 0.05	0.18	0.44
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	0.22	< 0.05	0.18	0.44
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			**MW03**	[R16]**MW04**
Sample Matrix			**Water**	**Water**
Eurofins | mgt Sample No.			**S18-Fe15298**	**S18-Fe15299**
Date Sampled			**Feb 14, 2018**	**Feb 14, 2018**
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C6-C9	0.02	mg/L	< 0.02	160
TRH C10-C14	0.05	mg/L	< 0.05	5.1
TRH C15-C28	0.1	mg/L	< 0.1	3.6
TRH C29-C36	0.1	mg/L	< 0.1	0.4
TRH C10-36 (Total)	0.1	mg/L	< 0.1	9.1

Client Sample ID			MW03	[R16]MW04
Sample Matrix			Water	Water
Eurofins | mgt Sample No.			S18-Fe15298	S18-Fe15299
Date Sampled			Feb 14, 2018	Feb 14, 2018
Test/Reference	LOR	Unit		
BTEX				
Benzene	0.001	mg/L	< 0.001	2.6
Toluene	0.001	mg/L	< 0.001	62
Ethylbenzene	0.001	mg/L	< 0.001	2.2
m&p-Xylenes	0.002	mg/L	< 0.002	12
o-Xylene	0.001	mg/L	< 0.001	4.8
Xylenes - Total	0.003	mg/L	< 0.003	17
4-Bromofluorobenzene (surr.)	1	%	80	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene[N02]	0.01	mg/L	< 0.01	< 0.5
TRH C6-C10	0.02	mg/L	< 0.02	170
TRH C6-C10 less BTEX (F1)[N04]	0.02	mg/L	< 0.02	86
TRH >C10-C16	0.05	mg/L	< 0.05	5.6
TRH >C10-C16 less Naphthalene (F2)[N01]	0.05	mg/L	< 0.05	5.6
TRH >C16-C34	0.1	mg/L	< 0.1	2.4
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Eurofins l mgt Suite B1			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Feb 20, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C36			
BTEX	Sydney	Feb 14, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Feb 14, 2018	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Feb 20, 2018	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			

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NATA # 1261
Site # 23736

Company Name:	WSP Australia P/L NSW	**Order No.:**	PS107652	**Received:**	Feb 14, 2018 2:48 PM
Address:	Level 27, Ernst & Young Centre Sydney NSW 2001	**Report #:**	584733	**Due:**	Feb 21, 2018
		Phone:	02 9272 5586	**Priority:**	5 Day
		Fax:	02 9272 5101	**Contact Name:**	Andrew Hill
Project Name:	UNITED UPSS GME Q1 2018				
Project ID:	PS107652_UNITED_DEE WHY THE STRAND				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Eurofins | mgt Suite B1
Melbourne Laboratory - NATA Site # 1254 & 14271						X
Sydney Laboratory - NATA Site # 18217						X
Brisbane Laboratory - NATA Site # 20794						
Perth Laboratory - NATA Site # 23736						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	MW02	Feb 14, 2018		Water	S18-Fe15291	X
2	MW01	Feb 14, 2018		Water	S18-Fe15294	X
3	MW10A	Feb 14, 2018		Water	S18-Fe15296	X
4	MW05	Feb 14, 2018		Water	S18-Fe15297	X
5	MW03	Feb 14, 2018		Water	S18-Fe15298	X
6	MW04	Feb 14, 2018		Water	S18-Fe15299	X
Test Counts						6

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

ug/L: micrograms per litre

ppb: Parts per billion

org/100mL: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	72			70-130	Pass	
TRH C10-C14	%	94			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	71			70-130	Pass	
Toluene	%	76			70-130	Pass	
Ethylbenzene	%	72			70-130	Pass	
m&p-Xylenes	%	79			70-130	Pass	
o-Xylene	%	77			70-130	Pass	
Xylenes - Total	%	78			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	78			70-130	Pass	
TRH C6-C10	%	76			70-130	Pass	
TRH >C10-C16	%	120			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Fe13602	NCP	%	78			70-130	Pass	
TRH C10-C14	S18-Fe15291	CP	%	102			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Fe13602	NCP	%	83			70-130	Pass	
Toluene	S18-Fe13602	NCP	%	87			70-130	Pass	
Ethylbenzene	S18-Fe13602	NCP	%	76			70-130	Pass	
m&p-Xylenes	S18-Fe13602	NCP	%	86			70-130	Pass	
o-Xylene	S18-Fe13602	NCP	%	86			70-130	Pass	
Xylenes - Total	S18-Fe13602	NCP	%	86			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S18-Fe13602	NCP	%	76			70-130	Pass	
TRH C6-C10	S18-Fe13602	NCP	%	81			70-130	Pass	
TRH >C10-C16	S18-Fe15291	CP	%	91			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S18-Fe19000	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S18-Fe15290	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S18-Fe15290	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S18-Fe15290	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S18-Fe19000	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S18-Fe19000	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S18-Fe19000	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S18-Fe19000	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S18-Fe19000	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S18-Fe19000	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S18-Fe19000	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S18-Fe19000	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S18-Fe15290	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S18-Fe15290	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S18-Fe15290	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	

Comments

This report has been revised (V2) to include selected samples only as per client's request.

Sample Integrity

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

Comments

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
R16	The LORs have been raised due to the high concentration of one or more analytes

Authorised By

Nibha Vaidya	Analytical Services Manager
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

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