



2-4 Kayuga Close, Caves Beach

Detailed Site Investigation

Health Infrastructure (NSW Government Health Infrastructure)

17 March 2026

→ The Power of Commitment



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Executive summary

Objectives and purpose

The overall project objectives are to:

- Assess constraints from potential contamination to inform the design of the new ambulance station.
- Provide baseline contamination data to support planning approvals for the new station.
- Identify key contamination risks and constraints at the site in the context of the Ambulance Infrastructure Program (AIP), to allow development of mitigation measures.

The purpose of this report is to outline the results of the field investigation to assess whether the site is contaminated and whether the site is suitable for the proposed land use (new ambulance station) or can be made suitable after remediation.

Scope

The scope of work undertaken by GHD Pty Ltd (GHD) in preparing this Detailed Site Investigation (DSI) comprised:

- Investigative works including borehole drilling, soil sampling, and groundwater sampling as per the Sampling, Analysis, and Quality Plan (SAQP) (GHD, 2025).
- Preparation of this report in accordance with the NSW Environment Protection Authority (2020) Consultants Reporting on Contaminated Land Guidelines.

Findings

Key findings of this investigation are:

- Soil concentrations were below the adopted human health criteria for the current land use and proposed future land use, and for construction workers undertaking future works. It is noted that the investigation was limited to the locations surrounding the existing building footprint, and contamination may exist underneath the buildings.
- Preliminary in-situ waste classification indicated that the material analysed as part of this investigation is classified as General Solid Waste (non-putrescible).
- Acid Sulfate Soil (ASS) results indicate Potential ASS (PASS) within the site. PASS material requiring off-site disposal requires additional management measures.
- Groundwater concentrations for arsenic are above the adopted guidelines for drinking water and recreational activity, and arsenic copper, chromium, and zinc above the adopted ecological criteria, which is consistent with previous findings by JK Environments (2023c). Based on the existing evidence, concentrations are unlikely to be attributable to the site and instead are attributable to ASS (for arsenic, resulting from the oxidation of ASS and the release of arsenic), ambient background concentrations (for copper, chromium, and zinc), or off-site sources of contamination.
- Whilst it is unlikely groundwater bores surrounding the site are being used as drinking water, on-site construction workers may come into contact with groundwater.
- Whilst groundwater flow direction at the site is likely in the north-east direction, groundwater level and flow direction may be tidally influenced due to the proximity of the site to the coastline. In addition, the existing monitoring wells have not been formally surveyed which limits the accuracy of the current understanding of groundwater levels and flow direction.

Conclusions

Based on the findings of this investigation, the site is considered suitable from a contamination perspective for the proposed land use as an ambulance station with the adoption of the construction phase recommendations detailed below. Provided that the recommendations below will be adopted, a contamination remedial action plan is not required for the site.

Should the site's land use change or be proposed to change, a contamination investigation should be completed to assess any potential change in risk.

Recommendations

Based on the findings of this investigation, GHD makes the following recommendations:

- Future construction works should include a Construction Environmental Management Plan (CEMP) to manage any potential risks associated with contamination on the site, including:
 - An unexpected finds protocol for asbestos and other hazardous substances. While asbestos was not detected in this investigation, the potential for asbestos still exists within the site.
 - Procedures for managing site soil and surface water to prevent egress from the site, such as an erosion and sediment control plan.
 - Health and safety procedures to protect construction workers that may come into contact with arsenic-contaminated groundwater, present at levels above the adopted recreational criterion.
 - Future construction works should include an Acid Sulfate Soil Management Plan (ASSMP) to manage spoil excavated below the water table in line with relevant jurisdictional guidelines. Construction should avoid dewatering of groundwater.
- Future construction works that involve demolition of existing buildings should consider procedures to safely demolish buildings identified as containing hazardous building materials to prevent soil contamination during the demolition process.
- Groundwater conditions require improved characterisation, which would support the development of the CEMP and ASSMP. To better understand groundwater levels, direction, and arsenic composition:
 - Survey of MW1, MW4, and MW6 to ascertain accurate groundwater height.
 - Installation of continuous data loggers in MW1, MW4, and MW6 to assess the potential tidal influence on groundwater levels.
 - An additional round of groundwater monitoring for heavy metals, pH, and acidity at MW1, MW4, and MW6, including speciated arsenic.

This report is subject to, and must be read in conjunction with, the limitations set out in section 1.4 and the assumptions and qualifications contained throughout the Report.

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1. Introduction

1.1 Background

NSW Government Health Infrastructure (Health Infrastructure) engaged GHD Pty Ltd (GHD) to prepare a Detailed Site Investigation (DSI) for 2-4 Kayuga Close, Caves Beach NSW 2281 (the site) to support redevelopment planning of the site. The site currently contains two on-grade warehouses, two grassed areas with trees adjacent to Kayuga Close, with the remainder of the site covered in hardstand. A site outline is presented in Figure 2, Appendix A.

This report is part of GHD's combined contamination and geotechnical project, which assists Health Infrastructure in delivering its Ambulance Infrastructure Program (AIP). The geotechnical information is outlined in a separate geotechnical interpretive report (GIR). GHD understands that Health Infrastructure is proposing to construct a new ambulance station at the site as part of the AIP.

1.2 Objective of the investigation and purpose of this report

The overall project objectives are to:

- Assess constraints from potential contamination to inform the design of the new ambulance station.
- Provide baseline contamination data to support planning approvals for the new station.
- Identify key contamination risks and constraints at the site in the context of the AIP, to allow development of mitigation measures.

The purpose of this report is to outline the results of the field investigation to assess whether the site is contaminated and whether the site is suitable for the proposed land use (new ambulance station) or can be made suitable after remediation.

1.3 Scope

The scope of work undertaken by GHD in preparing this DSI comprised:

- Investigative works including borehole drilling, soil sampling, and groundwater sampling as per the Sampling, Analysis, and Quality Plan (SAQP) (GHD, 2025).
- Preparation of this report in accordance with the NSW Environmental Protection Authority (EPA) (2020) Consultants Reporting on Contaminated Land Guidelines.

1.4 Limitations

This report has been prepared by GHD for Health Infrastructure (NSW Government Health Infrastructure) and may only be used and relied on by Health Infrastructure (NSW Government Health Infrastructure) for the purpose agreed between GHD and Health Infrastructure (NSW Government Health Infrastructure) as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Health Infrastructure (NSW Government Health Infrastructure) arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

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

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

Except as otherwise expressly stated in this Report, GHD makes no warranty or representation as to the presence or otherwise of asbestos and/or asbestos containing materials ("ACM") on the site. If fill material has been imported on to the site at any

time, or if any buildings have been demolished on the site or material from such buildings disposed of on the site (particularly if the buildings were constructed prior to 1970), the site may contain asbestos or ACM.

GHD has considered and/or tested for only those chemicals specifically referred to in this Report and makes no statement or representation as to the existence (or otherwise) of any other chemicals.

Subsurface conditions can vary across a particular site and cannot be exhaustively defined by the investigations carried out prior to this Report. As a result, it is unlikely that the results and interpretation in this Report will represent conditions at any location other than the specific points of sampling. A site that appears to be unaffected by contamination at the time of the Report may later, due to natural causes or human intervention, become contaminated.

No investigations have been undertaken into any off-site conditions, or whether any adjoining sites may have been impacted by contamination or other conditions originating from this site.

GHD has prepared this report on the basis of information provided by Health Infrastructure (NSW Government Health Infrastructure) and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

These Disclaimers should be read in conjunction with the entire Report and no excerpts are taken to be representative of the findings of this Report.

2. Site details

2.1 Site identification

Site identification details are presented in Table 1.

Table 1 Site identification details

Information	Details
Street Address	2-4 Kayuga Close, Caves Beach, NSW 2281
Legal description	Lot 4 in DP251324 (2 Kayuga Close) Lot 3 in DP251324 (4 Kayuga Close)
Size	~3900 m ²
Traditional owner	Awabakal people
Local government area	Lake Macquarie City Council
Current land zoning	General Industrial – E4
Current site use	When last inspected in 2023 the site was used as a storage facility for solar panels and steel formwork. The site contains two on grade warehouses, two grassed areas with trees adjacent Kayuga Close with the remainder of the site covered in hardstand.
Surrounding land use	North – Industrial, residential and natural waterway East – Plains Gully, residential, bushland and natural waterway South – Industrial, residential and national park West – Industrial, bushland and natural waterway

A summary of site environmental setting information from the PSI (JK Environments, 2023a) is presented in Table 2.

Table 2 Summary of site environmental setting information

Information	Details
Topography	The topography of the site is identified as between 0 and 4 metres Australian Height Datum (AHD). The surrounding area generally slopes from south to north.
Hydrology	The closest surface water body to the site is Plains Gully located ~20 metres east at its closest point. Plains Gully is a minor non-perennial creek which flows north and flows into Black Ned's Bay ~300 metres north of the site. Black Ned's bay is connected to the coastline at Swansea Channel.
Soil landscape	The site is identified to comprise the Woy Woy soil landscape. Woy Woy landscapes contain level to gently undulating non-tidal sand flats and beach ridges on marine sands. Extensively cleared low eucalypt woodland.
Acid sulfate soils (ASS)	ASS mapping indicates that the eastern portion of the site is identified as a Class 3 ASS risk area where works more than one metre below natural ground surface, or by which the water table is likely to be lowered more than 1 metre below natural ground surface, present environmental risks. GHD assessed the Acid Sulfate Soils Risk dataset (Naylor, et al., 1998) which maps coastal ASS. The dataset indicates that the eastern portion of the site is identified as a low probability area of ASS, with areas of high probability immediately north of the site boundary.
Geology	The map geology of the site indicates that the site is underlain by <i>Coastal deposits – backbarrier flat facies</i> which is described as fine to medium grained quartz-lithic sand with carbonate and humic components (marine-deposited), indurated sand, silt, clay, gravel, organic mud and peat.
Hydrogeology	The hydrogeology of the area is described as porous with extensive aquifers of low to moderate productivity. There are 33 registered groundwater boreholes within 2000 metres of the site with the majority used for domestic purposes. The closest borehole to the site is located ~185 metres east and is used for domestic purposes.

2.2 Proposed site redevelopment

Preliminary development plans provided to GHD for the site indicate the existing warehouses, front fence, two trees, and existing hardstand at the site are to be demolished, with a new on-grade ambulance station to be constructed. The preliminary development plans are included in the SAQP (GHD, 2025).

2.3 Previous site investigations

Three reports associated with previous investigations undertaken at the site were provided to GHD as part of this project. GHD reviewed these reports, which are summarised below. For more detailed information, refer to the specific document.

Preliminary (Stage 1) Site Investigation (JK Environments, 2023a)

The purpose of the PSI was to make a preliminary assessment of site contamination for due diligence purposes. The scope of works included a desktop review of information and a site inspection. The desktop review identified the following regarding the site's history:

- The site has been owned by a number of companies and individuals since 1912 but remained undeveloped until circa 1975.
- In 1975 earthworks were undertaken at the site with vegetation removed and a water channel constructed on the eastern boundary
- The current warehouses have been present on site since at least 1994.
- A small structure on the eastern boundary was demolished circa 2007.
- The site has been owned by Ausgrid since 2012 and as of 2023 was used as a storage facility for solar panels and steel formwork.

The assessment identified the following potential contamination sources:

- Fill material.
- Storage of electrical equipment (cables and transformers).
- Use of pesticides around site.
- Hazardous building materials in existing buildings.
- Off-site industrial land uses (including automotive repairs, smash repairs and lubricating equipment business).

Hazardous Buildings Materials Survey (JK Environments, 2023b)

The hazardous buildings materials survey identified the following at the site:

- Asbestos (non-friable) was identified within the interior and exterior of both existing buildings.
- Lead paint was identified on a timber doorframe and steel framework of 'building 1' (4 Kayuga Close).
- One polychlorinated biphenyl (PCB) containing capacitor was identified in 'building 2' (2 Kayuga Close).
- Synthetic Mineral Fibres (SMF) was identified in the form of internal insulation and insulation batts in both buildings.

Preliminary Intrusive Investigation (JK Environments, 2023c)

The purpose of the Preliminary Intrusive Investigation was to make a preliminary assessment of site contamination for due diligence purposes. The scope of works included the drilling of six boreholes to at least six metres below ground level (m bgl) with three of the boreholes converted to groundwater monitoring wells which were also sampled, these locations are displayed on Figure 3, Appendix A. The suite of contaminants analysed in this investigation is presented in Table 3.

Table 3 *Preliminary Intrusive Investigation analytical suite*

Soil	Groundwater
– Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc) – Polycyclic aromatic hydrocarbon (PAH) – Total recoverable hydrocarbons (TRH) – Benzene, toluene, ethylbenzene and xylene (BTEX) – Polychlorinated biphenyls (PCB) – Organochloride pesticides (OCP) – Organophosphorus pesticides (OPP) – Asbestos (ID)	– Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc) – Polycyclic aromatic hydrocarbon (PAH) – Total recoverable hydrocarbons (TRH) – Benzene, toluene, ethylbenzene and xylene (BTEX) – Polychlorinated biphenyls (PCB) – Organochloride pesticides (OCP) – Organophosphorus pesticides (OPP) – Volatile organic compounds (VOC) – pH – Conductivity

The assessment identified the following:

- Fill material was observed to depths of 0.5 to 1.85 metres below ground level (m bgl) and was deeper in the east of the site. Ash was observed in the fill at BH4, and metal fragments were observed in the fill at BH5, both these boreholes are located in the eastern area of the site. No other anthropogenic material, staining or odours were observed.
- Groundwater was encountered in all boreholes between 2 to 2.4 m bgl during drilling.
- Photoionisation detector (PID) field screening results ranged from 0 to 0.1 parts per million (ppm).
- All soil concentrations were below the adopted human health and ecological criteria for a commercial/industrial land use.
- Concentrations of arsenic (at two locations) and copper (at one location) in groundwater were above the adopted ecological criteria – Australia and New Zealand Guidelines for Fresh and Marine Water Quality (2018) 95% level of species protection.
- Groundwater results were compared against the Australian Drinking Water Guidelines (ADWG) (NHMRC, 2011 [Updated 2022]) multiplied by a factor of 10 to protect recreational water users. No exceedances were reported.
- In GHD's desktop review, a number of domestic abstraction bores were identified in off-site downgradient locations. As a conservative approach the groundwater results (JK Environments, 2023c) were screened against the ADWG (NHMRC, 2011 [Updated 2022]) to protect potential potable users. Two exceedances were identified above the arsenic criteria of 0.01 mg/L with a concentration of 0.011 mg/L reported at MW6 and a concentration of 0.032 mg/L reported at MW1.

3. Preliminary conceptual site model

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM is developed using information obtained from site history, site observations, land use and expected ground conditions. Once the contamination status is understood through the sampling and analysis process, the CSM then allows the assessor to evaluate the risk posed by the contamination to the identified receptor, and whether actions are required to manage that risk.

This preliminary CSM was presented in the SAQP (GHD, 2025).

3.1 Potential sources of contamination

3.1.1 On-site sources

Based on the previous reports detailed in Section 2.3 the following on-site sources of contamination have been identified:

- Asbestos, lead paint and PCB as identified in the Hazardous Material Survey (JK Environments, 2023b).
- Potential use of pesticides at the site.
- Potential presence of contaminated fill materials at the site.

3.1.2 Off-site sources

Based on the previous reports detailed in Section 2.3 the following off-site sources of contamination have been identified:

- Potential for contaminants including arsenic to be present in groundwater from nearby industrial sites and electrical substation.

3.2 Potential contamination migration and exposure pathways

Based on the proposed land use and the construction phase the following potential exposure and migration pathways have been identified:

- Dermal contact with contaminated soil during construction and maintenance activities.
- Incidental ingestion of contaminated soil during construction and maintenance activities.
- Inhalation of contaminated soil during construction and maintenance activities.
- Extraction, use or ingestion of contaminated groundwater.

3.3 Potential receptors

Based on the current and future land uses; the following receptors have been identified:

- Current site users.
- Future construction and intrusive maintenance workers.
- Future site users and visitors post site redevelopment into an ambulance station.
- Off-site groundwater users.
- Off-site aquatic ecological receptors.

3.4 Source-pathway-receptor (SPR) linkages

Based on the information obtained through desktop searches and previous reports, a summary of the risks to human and ecological health for the potential identified sources, pathways and receptors is presented in Table 4.

Table 4 *Preliminary Conceptual Site Model*

Source	Contaminants	Pathway	Receptor	Potentially complete linkages?	Comments
Soil impacted by: - Asbestos, lead paint and PCB as identified in the Hazardous Material Survey (JK Environments, 2023b). - Potential use of pesticides at the site. - Potential presence of contaminated fill materials at the site.	- Asbestos, lead, PCB - Pesticides - Contaminated fill (asbestos, metals, PAH, TRH, BTEX, PCB)	Direct contact including ingestion or inhalation	Current site users	Yes	Current site users may be exposed to soils while at the site
			Future construction and intrusive maintenance workers		Construction and future intrusive maintenance workers may be exposed to soils during works on site
			Future site users and visitors post site redevelopment into an ambulance station		Future site users may be exposed to contaminated soils if these soils remain at the site
Groundwater impacted by: - Lead paint and PCB as identified in the Hazardous Material Survey (JK Environments, 2023b). - Potential use of pesticides at the site. - Potential presence of contaminated fill materials at the site. - Arsenic.	- Metals including arsenic, lead, and zinc - PCB - PAH, TRH & BTEX	Extraction, use or ingestion of contaminated groundwater	Future construction and intrusive maintenance workers	Possible if construction/maintenance workers encounter groundwater during works	While the proposed ambulance station is on-grade (no basement), there is potential that groundwater will still be encountered during construction as it was previously identified at 2 metres below ground level
			Off-site groundwater users	Yes	Considering there are many groundwater wells used for domestic purposes in the surrounding area, off-site groundwater users could be exposed to contaminated groundwater. Because of exceedances of drinking water guidelines were reported previously in Section 2.3, it is recommended to complete an additional round of groundwater monitoring event
		Direct contact	Off-site aquatic ecological receptors	Yes	Given the nearest water body is ~20 metres east of the site which flows into Black Ned's Bay ~300 metres north of the site there is potential for aquatic ecological receptors to be exposed to contaminated groundwater

4. Assessment criteria

The assessment criteria adopted for this investigation is presented in Table 5.

Table 5 Summary of adopted assessment criteria

Guideline	Criteria	Rationale
NEPM (NEPC, 2013) health investigation levels (HIL)	HIL-D (commercial / industrial)	The HIL was selected as it considers a broad range of contaminants and is applicable for assessing human health risk. The site use will be a new ambulance station.
NEPM (NEPC, 2013) health screening levels (HSL)	HSL-D (commercial / industrial)	The HSL was selected as it considers potential exposure to petroleum hydrocarbons. The site use will be a new ambulance station.
NSW EPA Waste Classification Guidelines, Part 1, Classifying Waste (NSW EPA, 2014a)	Table 1 of Waste Classification guidelines: – Special Waste (Asbestos) – General Solid Waste CT1 (Contaminant Threshold Value 1) (No Leaching) Restricted Solid Waste CT2 (Contaminant Threshold Value 2) (No Leaching) – General Solid Waste SCC1 (Specific contaminant concentration 1) and TCLP1 (Toxicity characteristics leaching procedure 1) – Restricted Solid Waste SCC2 (Specific contaminant concentration 2) and TCLP2 (Toxicity characteristics leaching procedure 2)	The guidelines provide criteria for a preliminary in-situ assessment of the likely waste classification for material requiring offsite disposal.
ADWG (NHMRC, 2011 [Updated 2022]) Health and recreational guidelines	Physical and chemical characteristics fact sheets	These guidelines were selected as they consider the potential of contamination for off-site groundwater users
ANZG (ANZG, 2018) Guidelines for Fresh and Marine Water Quality	Default Guideline Value, 95% protection level, freshwater	Selected as the guideline considers potential contamination off-site groundwater ecological receptors. Based on the surrounding land use, the 95% value for slightly to moderately disturbed ecosystems was selected. The value for freshwater was chosen based on electrical conductivity results from groundwater monitoring
ASSMAC (1998) Acid Sulfate Soil Manual	Action Criteria	This guideline was selected to consider the potential of impacts of Acid Sulfate Soils (ASS)

Ecological criteria for soil was not considered appropriate for this assessment based on the future site use as an ambulance station that will be largely covered in hardstand with landscaped areas that are assumed to comprise imported materials.

5. Data quality objectives

Data quality objectives (DQOs) were established for this investigation to assist in the design and implementation of data collection activities, such that the type, quantity, and quality of data obtained addresses the project objectives. The DQO process described in Schedule B2 of ASC NEPM (NEPC, 2013) was adopted for this project and involves seven steps, as presented in Table 6.

Table 6 Data quality objectives

Step	Description
Step 1 State the problem to be resolved	Did contamination exist on the site at concentrations which posed a risk to human and ecological health based on the proposed land use?
Step 2 Identify the decision/s to be made	To address the problem set out in Step 1, the following decisions are required to achieve the objective and to identify data gaps and additional information that may be required: – Do the concentrations of contaminants in the samples collected exceed the adopted assessment criteria? – Do the results of the sampling and analysis indicate there is a potential risk to human health and ecological receptors on-site and off-site? – Is there any management or remedial works required for development? – What likely waste classification is the material intended for offsite disposal?
Step 3 Identify the inputs to the decision	To inform the decisions, the following information is considered necessary: – Collection and analysis of samples to provide a dataset upon which to base subsequent decisions. – Comparison of analytical data to applicable guidelines to evaluate the potential for contamination to adversely impact upon human health and environmental receptors – Assessment of quality assurance and quality control data to determine the reliability of the data obtained – Preparation of a report documenting the findings and recommendation of the investigation
Step 4 Define the boundaries of the study	The lateral boundaries of the investigation area are as defined on Figure 3, Appendix A. The vertical boundary is defined as the maximum depth of the boreholes (8.9 m bgl).
Step 5 Develop a decision rule	The key decision rule is: – Are concentrations of contaminants of concern above the adopted assessment criteria? • If NO – contamination risk is low and the site is suitable for the proposed land use • If YES – assess how to make the site suitable for the proposed land use
Step 6 Specify the tolerable limits on decision errors	To minimise the potential for decision errors, data quality indicators and a Quality Assurance and Quality Control program has been established and is detailed in Section 6.8. Following fieldwork, a detailed assessment of sampling and measurement errors will be undertaken where potential decision errors will be identified and evaluated.
Step 7 Optimise the design for obtaining the data	The sample design was optimised through: – Appropriate laboratory analysis methodologies. – Evaluation and interpretation of results with respect to relevant guidelines.

6. Field investigation methodology

6.1 Fieldwork preparation

Prior to undertaking intrusive works the following were completed:

- Job Safety and Environmental Risk Assessment (JSEA).
- Review of Before You Dig Australia (BYDA) service plans.
- Pre-start meeting.
- Service locating of the site and boreholes.
- GHD underground utilities checklist.

6.2 Investigation locations

Five boreholes were drilled across the site for combined contamination and geotechnical purposes. Boreholes were drilled to a maximum depth of 8.9 metres.

The borehole locations as well as previous sampling locations are presented on Figure 3, Appendix A.

6.3 Analytical suite

The soil analytical suite is presented in Table 7.

Table 7 Soil analytical suite

Suite	Number of soil samples analysed	Number of groundwater samples analysed
Metals suite – arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury	6	3
PAH, TRH, BTEX	6	3
OCP, OPP, PCB	3	3
Asbestos identification (500 ml)	6	-
pH _F and pH _{FOX}	8	-
Chromium Reducible Sulphur	5	-

6.4 Deviations from the SAQP

Deviations between the proposed investigation scope and methodology outlined in the SAQP (GHD, 2025), and this assessment, outlined in Section 6 of this report, are identified in Table 8 below.

Table 8 Deviations from the SAQP

Deviation	Location	Section in SAQP	Rationale
Additional locations	CB-BH01A CB-BH03A	Section 6.2	These locations were added to provide additional information for the geotechnical scope of work.
	CB-SS01		A surface soil sample was collected to characterise potential surface soil contamination after CB-BH03 was moved from grass to concrete due to the presence of underground services

Deviation	Location	Section in SAQP	Rationale
Acid sulfate soil analysis	CB-BH03A	Section 6.3	Acid Sulfate Soil (ASS) samples were collected from CB-BH03A after evidence of ASS was identified at this location.

6.5 Soil sampling

Drilling and soil sampling were undertaken on 19 and 29 May 2025. Soil samples were generally collected at 0.5 m bgl, 1 m bgl and at 1 m intervals thereafter until reaching termination depth or refusal on bedrock. Soil samples were collected from the SPT (Standard Penetration Test) spoon sampler where there was ample sample recovery volume, then alternatively from the drilling auger. A PID was used to screen soil samples for volatiles. As all locations were drilled within the hardstand area, one surface soil sample was collected to capture potential surface soil contamination.

All field observations and subsurface conditions were recorded on field lithological logs in general accordance with AS 1726-2017 Geotechnical Site Investigation (Standards Australia, 2017), including presence of fill materials and features such as discolouration, staining and odours. Borehole logs are presented in Appendix B.

6.6 Groundwater sampling

The three existing groundwater monitoring wells were gauged to determine the standing water levels using an interface water level probe, followed by the collection of groundwater samples. Groundwater gauging and sampling were undertaken on 19 May 2025.

6.7 Sample handling, storage, and transportation

All fieldwork was conducted with reference to the NEPM (NEPC, 2013) and appropriate Standard Field Operating Procedures. An experienced environmental consultant undertook the fieldwork and sampling program. Soil logs, photographs and location coordinates were obtained for each sampling location. Laboratory tests were completed by National Association of Testing Authorities (NATA) accredited laboratories.

Samples were collected using new disposable gloves and placed directly into laboratory-provided Teflon-free sample jars and bags, then placed in chilled, insulated containers for transport to the laboratory. Each sampling container was labelled showing job number, date, sample location, depth and sampler initials. Sample details were entered onto a chain of custody (CoC) form that accompanied the samples to the laboratory. A CoC form was used for every batch of samples submitted to the laboratory and included the scheduled analysis for each sample to be undertaken. Samples were delivered to the laboratory within the recommended holding times for the respective analytes.

6.8 Quality assurance and quality control (QA/QC)

An evaluation of the field and laboratory data quality was undertaken in accordance with the NEPM – Schedule B2, Assessment of data quality (NEPC, 2013). Data quality indicators (DQI) including precision, accuracy (or bias), representativeness, completeness and comparability have been reviewed and a DQI interpretive report for site assessment program is included in Appendix D.

Overall, the review of the QA/QC program indicates that the soil and groundwater analytical data are of an acceptable quality upon which to draw meaningful conclusions regarding the contamination status of environmental media at the site.

7. Site assessment results

7.1 Field observations and walkover

A walkover of the site was undertaken by a GHD Environmental Scientist on 19 May 2025 as part of the site investigation.

Site inspection records are presented in Appendix E and a photolog is presented in Appendix F.

The following information was noted:

- The surface condition comprised of hardstand surrounding the site buildings, with grassed areas at the east and west of the site (refer Photos 1 to 3, Photo 7 and 8, Appendix F).
- The slope was generally flat, sloping slightly east and slightly west.
- No visible staining or odour was present.
- Small amounts of dead branches, wooden planks and boards, plastic litter, metal sheeting, and wooden pallets were observed towards the eastern end of the site (refer Photos 4 to 6, and Photo 10, Appendix F).
- No evidence of underground storage systems on site, however, a concrete slab appeared to cover a potential underground septic tank or sewerage system (refer Photo 4, Appendix F). BYDA plans indicate a gravity main and sewer infrastructure in this area.

7.2 Soil

7.2.1 Soil profile and field observations

Subsurface stratigraphy is presented in Table 9 below. Borehole logs are presented in Appendix B.

Table 9 General stratigraphic profile

Locations	Approx depth range (mbgl)		Lithology	Contamination observations
	Top depth range	Bottom depth range		
Surface soil (CB-SS01)	0.00	-	FILL, Sandy SILT, low plasticity, sand fine to coarse grained, with fine to coarse grained gravels	No odour, no staining, organic material and rootlets
All borehole locations	0.00	0.12 – 0.20	Concrete	No odour or staining
	0.12 – 0.20	1.0 – 1.5	FILL, Clayey SAND, SAND, and Sandy CLAY, fine to coarse grained sand and low plasticity clay, brown and grey, with gravels	Organic odour in CB-BH02 and CB-BH03, No odour or staining in remaining locations
	1.0 – 1.5	1.95 – 4.00	NATURAL, Clayey SAND, Sandy CLAY, and CLAY, fine to coarse grained sand, low plasticity clay, brown and grey	Organic odour (all locations), shell fragments (CB-BH01A only), plant matter (CB-BH03 only)
	1.95 – 4.00	8.00 to 8.50	NATURAL SAND, fine to coarse grained, grey and dark grey,	Shell fragments, plant matter, and organic odour, and brown staining (CB-BH03 and CB-BH03A only)
CB-BH02 and CB-BH03	8.50	8.65 – 8.90	Clayey SAND (CB-BH02) and SAND and CLAY (CB-BH03), fine to coarse grained, low plasticity, brown and grey-brown, extremely weathered sandstone	No odour, no staining

No potential asbestos containing material for was observed within the soil profile.

The lithology is consistent with boreholes from the PSI (JK Environments, 2023c) and published geology, which indicates fine to medium grain sands with organic marine deposited components (refer Table 2).

7.2.2 Field PID screening

Soil samples collected in fill were screened in the field using a photo-ionisation detector (PID) for the presence of volatile organic compounds (VOC). The PID readings ranged between 0.0 ppm and 0.7 ppm (CB-BH02_1.0-1.45). The PID readings and calibration certificates are included in the Borelogs in Appendix B and Appendix G, respectively.

7.2.3 Soil analytical results

Twenty-four primary soil samples were analysed as part of the current investigation. Soil analytical results were compared against the guidelines (refer Section 4) and are presented in Tables C1 to C3, Appendix C. Laboratory certificates are provided in Appendix H.

Human health

All soil samples reported concentrations below the adopted human health criteria for commercial industrial land use, as presented in Table C2, Appendix C.

Preliminary in-situ waste classification

Table 10 below presents the waste classification steps defined by the NSW EPA (2014a) waste classification guidelines, and a comment on each step in the classification process as it applies to the material at the site.

Table 10 Waste classification steps

Step	Classification	Comment
1	Is the waste special waste?	No. Asbestos was not detected in soil samples and potential ACM was not observed within soil at the site at the locations tested.
2	Is the waste liquid waste?	No. The material assessed is not a 'liquid waste' in its current form. The material was soil and capable of being picked up by a spade or shovel.
3	Is the waste pre-classified?	No. Materials do not meet the definition of pre-classified waste in the Waste Classification Guidelines.
4	Does the waste possess hazardous characteristics?	No. No hazardous characteristics, as defined in the Waste Classification Guideline, were identified during the site investigation.
5	Determining a waste's classification using chemical assessment	Waste generators must chemically assess their waste in accordance with Step 5 to determine the waste's classification where it has not been classified under Steps 1–4 of the Waste Classification Guidelines. The guidance specifies soil contaminant thresholds (CT1 and CT2) which characterise whether a soil sample result is general solid waste ($\leq$CT1), restricted solid waste ($>$CT1 and $\leq$CT2), or hazardous waste ($>$ CT2). If soil and a toxicity characteristics leaching procedure (TCLP) have been completed on a sample then other thresholds can be applied. These thresholds are referred to as the specific contaminant concentration (SCC) for soil and the leachable concentration (TCLP) for soil leachate. The thresholds (SCC1/TCLP1 and SCC2/TCLP2) characterise whether a soil sample result is general solid waste ($\leq$SCC1 and TCLP1), restricted solid waste ($>$SCC1 or TCLP1 and $\leq$ SCC2 and TCLP2), or hazardous waste ($>$SCC2 or $>$TCLP2). All soil analytical data was compared against the NSW waste classification criteria, as presented in Table C2, Appendix C. The results indicated no exceedances of the NSW EPA Contaminant Threshold 1 (CT1) for general solid waste. Therefore, the soils collected during this investigation can be preliminarily be classified as General Solid Waste (non-putrescible).

Part 4 of the NSW waste classification guidelines applies to acid sulfate soils (ASS) (NSW EPA, 2014b). This is discussed in Section 7.2.4.

Acid sulfate soils

ASS analysis was conducted at CB-BH03A after shell fragments, brown staining, and organic odours, which are indicators of ASS, were identified. The NSW Acid Sulfate Soils Risk dataset (Naylor, et al., 1998) which maps coastal ASS indicates the eastern portion of the site is identified as a low probability area of ASS, with areas of high probability immediately north of the site boundary. ASS results are detailed below and presented in Table C3, Appendix C. A statistical summary of analytical results is also presented in Table 11 below.

- Field screening (i.e. pH_F and pH_{FOX}) was carried out on eight samples collected from CB-BH03A.
 - pH_F:
 - Results were between 6.7 and 7.6 pH units, ranging from slightly acidic to slightly alkaline.
 - A pH less than or equal to 4.5 is likely to indicate the presence of actual ASS (AASS).
 - No samples reported pH below 4.5.
 - pH_{FOX}:
 - Results ranged between 2.7 and 4.5, following digestion with hydrogen peroxide (pH_{FOX}).
 - A decrease in pH between 2.8 and 4.0 pH units following oxidation was observed.
 - All samples were observed to have slight reactions after digestion.
 - A final pH of less than 3.5 can sometimes be indicative of hypersulfidic soils (i.e. potential ASS (PASS)). One sample reported a final pH below 3.5 (CB-BH03A, 2m, final pH 2.7).
 - pH_{KCL}
 - Results ranged from 5.3 to 7.0, indicating mildly acidic to neutral conditions, which is consistent with the field pH screening results.
- Based on the pH results, five samples were selected for further analysis:
 - Reduced inorganic sulfur (RIS) concentrations in the form of potential sulfidic acidity chromium reducible sulphur (CrS) ranged from 0.008 to 0.041 %S. Only one sample reported concentrations above the ASSMAC (1998) action criterion of 0.03 %S (CB-BH03A, 6m, 0.041 %S).
 - Net acidity (%S) (excluding Acid Neutralising Capacity (ANC)) ranged from 0.013 to 0.051 %S.

Table 11 Statistical summary of ASS results

Statistic	pH _F	pH _{FOX}	pH KCl	Chromium reducible sulfur (CrS) (%S)	Titrateable Actual Acidity (%S)	Net Acidity (exc. ANC) ¹ (%S)
Action criterion	-	-	-	0.03	0.03	0.03
Minimum	6.7	2.7	5.3	0.008	<0.003	0.013
Maximum	7.6	4.5	7.0	0.041	0.020	0.051
Mean	7.3	3.9	6.1	0.022	0.0078	0.030
N	8	8	8	5	5	5
1. Net Acidity excluding ANC = CrS (%S) + Titrateable Actual Acidity (%S). ANC has been excluded in the calculation of net acidity as where carbonate is present in the form of shell fragments (as in these samples) it is frequently not available for adequate neutralisation due to the larger surface area and chemical form of carbonate in shell (i.e. aragonite) which is not highly chemically available (ASSMAC, 1998).						

7.2.4 Discussion of soil results

Human health and waste classification criteria

Soil analytical results indicated no exceedances of the human health criteria. This is consistent with the findings in the PSI (JK Environments, 2023c) which reported no exceedances of the adopted human health criterion.

Waste classification criteria

Comparison of results against the waste classification guidelines indicated the soil material collected as part of this investigation would be classified as General Solid Waste (non-putrescible). This is consistent with the findings in the PSI (JK Environments, 2023c) which reported a preliminary waste classification of general solid waste (non-putrescible).

Acid sulfate soil results

ASS results indicated the presence of PASS with pH values decreasing between 2.8 and 4.0 pH units. CrS analysis at CB-BH03A from a sample collected at 6m reported CrS results above the ASSMAC (1998) action criterion. CrS results from samples at 1m, 2m, 3m, and 8m reported concentrations below the criterion.

A combination of visual and olfactory indicators of ASS, including brown staining, shell fragments, and odours, were reported at all investigation locations, indicate that PASS may be localised with the soil profile and present at broader areas within the site.

Potential acid sulfate soils are unlikely to acidify when undisturbed, but when excavated or drained, oxidation can acidify the soil, which can lead to the release of metals in toxic amounts and the generation of acidic conditions.

This may have implications for the management of spoil generated during construction. Part 4 of the NSW Waste Classification Guidelines (NSW EPA, 2014b) indicates that PASS may be disposed of in water below the permanent water table provided this occurs within 24 hours of excavation and they meet the definition of VENM under the *Protection of Environment Operations Act (NSW) 1997*.

Where possible, proposed construction should avoid both the excavation of soil below the water table and the dewatering of groundwater. Should excavation of material for construction extend below the water table, an ASS Management Plan will be required to manage the spoil.

7.3 Groundwater

7.3.1 Groundwater gauging

Groundwater gauging results obtained during the investigation are summarised in Table 12 below.

Table 12 Groundwater gauging results 19 May 2025

Well ID	Date	Depth to groundwater (mbTOC)	Well depth (mbTOC)	Ground elevation ¹ (mAHD ²)	Top of casing (mbgl)	Corrected water level ³ (m AHD)	17/05/2023 Water level (m AHD) ¹
MW1	19/05/2025	1.438	2.976	2.3	0.024	0.84	0.40
MW4	19/05/2025	1.678	3.468	2.6	0.047	0.88	0.08
MW6	19/05/2025	2.031	3.540	2.9	0.030	0.84	0.32
1. Source: (JK Environments, 2023c) 2. mAHD: Metres Australian Height Datum 3. Corrected water level calculated using the estimated ground elevation sourced from JK Environments (2023c) and top of casing measurements recorded during groundwater sampling							

Groundwater elevations ranged between 0.84 and 0.88 mAHD, or 1.46 and 2.06 mbgl. Groundwater elevations between locations were broadly similar, with a slightly higher elevation in the east of the site. Groundwater levels

observed during the May 2025 investigation are between 0.44 m to 0.80m higher than the groundwater levels observed in the PSI in May 2023 (JK Environments, 2023c).

Based on tidal forecasts, groundwater levels were gauged in May 2025 as the tide was rising, and gauged as the tide was falling in May 2023 (WillyWeather, 2025). The difference in groundwater levels between events suggests groundwater may be tidally influenced due to its proximity to the coastline.

Based on the surrounding topography and considering groundwater elevations from both the PSI and May 2025 gauging, groundwater flow at the site is likely towards the north-east, however, tidal variation may affect this.

In addition, GHD understands the existing monitoring wells have not been formally surveyed which limits the accuracy of the current understanding of groundwater levels and flow direction.

7.3.2 Groundwater quality

Groundwater quality parameters comprising dissolved oxygen (DO), electrical conductivity (EC), pH, Redox potential (Eh), and temperature were recorded during the groundwater monitoring event on 19 May 2025 using a calibrated water quality meter. Final parameters and observations recorded after sufficient purging of the wells is presented in Table 13 below. Field parameters and groundwater purge sheets are provided in Table C4, Appendix C and Appendix E, respectively.

Table 13 *Summary of groundwater quality*

Well ID	Date	Volume purged (L)	Temp (C°)	pH	Electrical conductivity (µS/cm)	DO (mg/L)	Field Eh (mV)	Corrected Eh (mV) ¹	Comments
MW1	19/05/2025	8	19.6	6.45	241.1	2.92	21.4	226.4	Pale yellow tinge, clear, no odour, no sheen, no sediment, no sediment
MW4	19/05/2025	6	21.3	6.39	1409	0.51	-10.6	194.4	Pale yellow tinge, cloudy, slight organic odour, no sheen, no sediment
MW6	19/05/2025	5	19.4	6.15	750	0.2	-9.0	196.0	Dark brown/ grey, cloudy, moderate sediment load, no odour, no sheen

¹Redox potential measured in the field using a silver chloride electrode were corrected to standard hydrogen electrode values by adding 205 mV.

The field parameters recorded during groundwater sampling indicate the following:

- Electrical conductivity (EC) ranged between 241.1 µS/cm, indicating 1409 fresh to slightly brackish water. EC results were higher in the wells closest to the coastline (MW4 and MW6).
- Redox potential (Eh) (corrected) ranged between 196.0 to 226.4 mV. Results indicate mild to moderate reducing conditions.
- pH ranged between 6.15 and 6.45, indicating slightly acidic to neutral conditions.
- Dissolved oxygen levels were generally indicative of poorly oxygenated conditions at MW4 and MW6, and well-oxygenated conditions at MW1.

7.3.3 Groundwater analytical results

Three primary groundwater samples were analysed as part of the current investigation in May 2025. Groundwater analytical results are summarised in Table C4, Appendix C. Laboratory reports are provided in Appendix H.

All groundwater analytical results collected during the May 2025 investigation were below the adopted human health criterion, with the exception of the arsenic concentrations in MW1. GHD also compared analytical results reported in the PSI (JK Environments, 2023c) against the assessment criteria adopted for this investigation and identified exceedances of Arsenic above the adopted criterion at MW1 and MW6.

Analytical results from the PSI and the May 2025 investigation, which exceed the adopted ADWG Health and Recreational criteria (NHMRC, 2011 [Updated 2022]) and ANZG Freshwater (FW) 95% species protection criterion (ANZG, 2018) for this investigation are presented in Table 14 below.

Table 14 Groundwater detections above the adopted criterion

Location ID	Analyte	Date	Concentration (mg/L)	Assessment Criteria Exceeded
MW1	Arsenic (dissolved)	17/05/2023	0.032	ADWG Health [0.01 mg/L] ANZG FW 95% [0.013 mg/L]
		19/05/2025	0.17 (Duplicate 0.179)	ADWG Health [0.01 mg/L] ADWG Recreational [0.1 mg/L] ANZG FW 95% [0.013 mg/L]
	Chromium (dissolved)	17/05/2023	0.001	ANZG FW 95% [0.001 mg/L]
	Zinc (dissolved)	19/05/2025	0.009	ANZG FW 95% [0.008 mg/L]
MW4	Chromium (dissolved)	17/05/2023	0.003	ANZG FW 95% [0.001 mg/L]
		19/05/2025	0.001	
	Zinc (dissolved)	19/05/2025	0.008	ANZG FW 95% [0.008 mg/L]
MW6	Arsenic (dissolved)	17/05/2023	0.011	ADWG Health [0.01 mg/L]
	Copper (dissolved)	17/05/2023	0.002	ANZG FW 95% [0.0014 mg/L]
	Chromium (dissolved)	17/05/2023	0.003	ANZG FW 95% [0.001 mg/L]
		19/05/2025	0.002	
	Zinc (dissolved)	19/05/2025	0.0014 (Duplicate 0.0016)	ANZG FW 95% [0.008 mg/L]

Samples collected in May 2025 for MW1, MW4, and MW6 reported concentrations below the limit of reporting (LOR) for the following analytes, however, the LOR was greater than the adopted criterion:

- Anthracene, benzo(a)pyrene, PAH (Sum), chlordane, DDT, endrin, heptachlor, hexachlorobenzene, toxaphene, azinphos methyl, chlorfenvinphos, chlorpyrifos, diazinon, dimethoate, fenitrothion, malathion, methyl parathion, omethoate, ethyl Parathion (or Parathion), terbufos, arochlor 1242, and arochlor 1254.

7.3.4 Discussion of groundwater results

Arsenic

Groundwater analytical results for arsenic at MW1 in May 2025 reported concentrations in exceedance of the ADWG Health and Recreational criteria (NHMRC, 2011 [Updated 2022]) and ANZG Freshwater 95% species protection criterion (ANZG, 2018). While the arsenic concentrations for the May 2025 sample is higher than the sample collected in the PSI (JK Environments, 2023c), it is within one order of magnitude.

The PSI also reported arsenic concentrations at MW6 of 0.011 mg/L which exceeds the ADWG Health criterion of 0.01 mg/L. The sample collected at MW6 in May 2025 reported arsenic concentrations of 0.007 mg/L which is below the ADWG Health criterion, but within the same order of magnitude.

MW1 is located in the north-western corner of the site and MW6 in the south-eastern corner of the site. Arsenic concentrations in groundwater are therefore inferred to be both hydraulically upgradient (MW6) and downgradient (MW1) based on the existing understanding of groundwater flow direction (refer section 7.3.1), however, current groundwater contours may not be accurate and groundwater levels may be tidally influenced.

Arsenic concentrations in soil collected in 2025 ranged between 2.7 mg/kg (CB-BH03) and 9.1 mg/kg (CB-BH01). These concentrations are below or slightly above ambient background concentrations of arsenic in NSW (5 mg/kg) as described in Table 36 of Schedule B5c of the NEPM (NEPC, 2013).

A review of the Bureau of Meteorology Australian Groundwater Explorer Database (BOM, 2025) identified that the groundwater wells listed for water supply or domestic use surrounding the site were installed in the 1980s or early 1990s, or have no installation date recorded. The age of these boreholes, the availability of town water, and the proximity of these wells to marine environments with brackish to saline water reduce the likelihood that the groundwater is currently being used as drinking water.

ASS are mapped less than 20m north of BH01/MW1 (Naylor, et al., 1998) and have been found on-site in CB-BH03. Borehole drilling log for BH01 (JK Environments, 2023c) also indicated shell fragments within the soil profile which is an indicator of ASS. Soil results from this investigation also indicated the potential for localised ASS across the site, which may account for concentrations of arsenic above the adopted criteria at this location.

Disturbance of ASS from construction and water level drawdown within wells over time can oxidise sulphidic materials and result in the release of high concentrations of heavy metals, including arsenic (Hinwood, A, et. al., 2006). Although metalloids such as arsenic are released under acidic conditions, they are also typically mobile at high pH after a return to reducing conditions following water table rebound (Water Quality Australia, 2018).

Groundwater was found to differentiate within BH01 by 0.4m between May 2023 and May 2025 and may have fluctuated further during this time period, resulting in the oxidation of soils and the release of arsenic.

Based on the above lines of evidence, arsenic concentrations may be related to ASS. However, this is not certain and remains a data gap.

Copper, chromium, and zinc

Exceedances of copper, chromium, and zinc above the ANZG 95% criterion are within one order of magnitude of the adopted criterion. Concentrations of these analytes were reported at wells inferred to be hydraulically upgradient and downgradient of the site, suggesting the source of these concentrations is not from the site and may be attributed to low-level background concentrations or off-site sources of contamination. Healthy vegetation was observed on site.

Concentrations below the LOR but above adopted criteria

Whilst concentrations below the LOR are above the adopted criteria for some analytes in groundwater, concentrations were not detected in soil, with the exception of CB-BH02_0.5-0.95 which reported benzo(a)pyrene concentrations equal to the LOR (0.5 mg/kg). In addition, these contaminants individually were not identified as contaminants of potential concern based on the site history and are unlikely to be present at levels above the adopted criteria.

8. Revised Conceptual site model

8.1 Summary of contamination

In summary, the following contamination was identified above the adopted criteria:

- Arsenic in groundwater above the ecological, recreational, and drinking water guidelines
- Copper, chromium and zinc above the ecological guidelines.
- PASS above the ASSMAC action criteria.

8.2 Sources of contamination

8.2.1 On-site sources

Based on the previous site investigations, desktop searches, and the current site investigation, the following on-site sources of contamination have been identified:

- Asbestos, lead paint and PCB as identified in the Hazardous Material Survey (JK Environments, 2023b).
- Potential use of pesticides at the site.
- Potential presence of contaminated fill materials at the site.
- Potential acid sulfate soils present on site.

8.2.2 Off-site sources

Based on the previous site investigations, desktop searches, and the current site investigation, the following off-site sources of contamination have been identified:

- Potential for contaminants to be present in groundwater from nearby industrial sites and electrical substation

8.3 Contamination migration and exposure pathways

Based on the proposed land use and the construction phase, the following potential exposure and migration pathways have been identified:

- Dermal contact with contaminated soil during construction and maintenance activities.
- Incidental ingestion of contaminated soil during construction and maintenance activities.
- Inhalation of contaminated soil during construction and maintenance activities.
- Extraction, use or ingestion of contaminated groundwater.

8.4 Receptors

Based on the current and future land uses, the following receptors have been identified:

- Current site users.
- Future construction and intrusive maintenance workers.
- Future site users and visitors post site redevelopment into an ambulance station.
- Off-site groundwater users.
- Off-site aquatic ecological receptors

8.5 Source-pathway-receptor linkages

Based on the current information, a summary of the risks to human and ecological health for the potential identified sources, pathways and receptors is presented in Table 15.

Table 15 *Source-pathway-receptor linkages*

Source	Contaminants	Pathway	Receptor	Complete linkages?	Comments
Soil impacted by: - Asbestos, lead paint and PCB as identified in the Hazardous Material Survey (JK Environments, 2023b). - Potential use of pesticides at the site. - Potential presence of contaminated fill materials at the site. - Potential acid sulfate soils	- Asbestos, lead, PCB - Pesticides - Contaminated fill (asbestos, metals, PAH, TRH, BTEX, PCB) - Acid sulfate soils (heavy metals, acidic soil)	Direct contact including ingestion or inhalation	Current site users	Unlikely	The investigation to date has not identified contamination in soil above the adopted site assessment criteria, with the exception of PASS at CB-BH03. PASS are unlikely to acidify when undisturbed, but when excavated or drained, oxidation can acidify the soil, which can lead to the release of metals in toxic amounts and the generation of acidic conditions.
			Future construction and intrusive maintenance workers	Potential – PASS	
			Future site users and visitors post site redevelopment into an ambulance station	Unlikely	
Groundwater impacted by: - Lead paint and PCB as identified in the Hazardous Material Survey (JK Environments, 2023b). - Potential use of pesticides at the site. - Potential presence of contaminated fill materials at the site. - Arsenic. - Acid sulfate soils.	- Metals including arsenic, lead, and zinc - PCB - PAH, TRH & BTEX	Extraction, use or ingestion of contaminated groundwater	Future construction and intrusive maintenance workers	Likely – if construction/maintenance workers encounter groundwater during works	While the proposed ambulance station is on-grade (no basement), there is potential that Arsenic concentrations in groundwater above the recreational criteria will be encountered during construction as groundwater was identified 1.46 mbgl.
			Off-site groundwater users	Potential	Off-site groundwater users of domestic supply wells could be exposed to contaminated groundwater. However, these wells were installed in the 1980s and early 1990s or have no drilling date recorded. It is therefore likely they were installed before town water was available. Based on the surrounding environment and the bore depths being less than 10 mbgl, groundwater is likely to be saline and not used for drinking water purposes.
		Direct contact	Off-site aquatic ecological receptors	Potential	Copper, chromium, and zinc concentrations are above the site's adopted criteria and may discharge to surface catchments. Disturbance of acid sulfate soils may result in the mobilisation of release of metals in toxic amounts and the generation of acidic conditions to downgradient receptors.

9. Findings, conclusions, and recommendations

The purpose of this report is to outline the results of the field investigation to assess whether the site is contaminated and whether the site is suitable for the proposed land use (new ambulance station) or can be made suitable after remediation.

9.1 Findings

Key findings of this investigation are:

- Soil concentrations were below the adopted human health criteria for the current land use and proposed future land use, and for construction workers undertaking future works. It is noted that the investigation was limited to the locations surrounding the existing building footprint and contamination may exist underneath the buildings.
- Preliminary in-situ waste classification indicated that the material analysed as part of this investigation is classified as General Solid Waste (non-putrescible).
- ASS results indicate PASS within the site. PASS material requiring off-site disposal requires additional management measures.
- Groundwater concentrations for arsenic are above the adopted guidelines for drinking water and recreational activity, and arsenic copper, chromium, and zinc above adopted ecological criteria, which is consistent with previous findings by JK Environments (2023c). Based on the existing evidence, concentrations are unlikely to be attributable to the site and instead be attributable ASS (for arsenic, resulting from the oxidation of ASS and the release of arsenic), ambient background concentrations (for copper, chromium, and zinc), or off-site sources of contamination.
- Whilst it is unlikely groundwater bores surrounding the site are being used as drinking water, on-site construction workers may come into contact with groundwater.
- Whilst groundwater flow direction at the site is likely in the north-east direction, groundwater level and flow direction may be tidally influenced due to the proximity of the site to the coastline. In addition, the existing monitoring wells have not been formally surveyed which limits the accuracy of the current understanding of groundwater levels and flow direction.

9.2 Conclusions

Based on the findings of this investigation, the site is considered suitable from a contamination perspective for the proposed land use as an ambulance station with the adoption of the construction phase recommendations detailed below. Provided that the recommendations below will be adopted, a contamination remedial action plan is not required for the site.

Should the site's land use change or be proposed to change, a contamination investigation should be completed to assess any potential change in risk.

9.3 Recommendations

Based on the findings of this investigation, GHD makes the following recommendations:

- Future construction works should include a Construction Environmental Management Plan (CEMP) to manage any potential risks associated with contamination on the site, including:
 - An unexpected finds protocol for asbestos and other hazardous substances. While asbestos was not detected in this investigation, the potential for asbestos still exists within the site.

- Procedures for managing site soil and surface water to prevent egress from the site, such as an erosion and sediment control plan.
- Health and safety procedures to protect construction workers that may come into contact with arsenic-contaminated groundwater, present at levels above the adopted recreational criterion.
- Future construction works should include an Acid Sulfate Soil Management Plan (ASSMP) to manage spoil excavated below the water table in line with relevant jurisdictional guidelines. Construction should avoid dewatering of groundwater.
- Future construction works that involve demolition of existing buildings should consider procedures to safely demolish buildings identified as containing hazardous building materials to prevent soil contamination during the demolition process.
- Groundwater conditions require improved characterisation, which would support the development of the CEMP and ASSMP. To better understand groundwater levels, direction, and arsenic composition:
 - Survey of MW1, MW4, and MW6 to ascertain accurate groundwater height.
 - Installation of continuous data loggers in MW1, MW4, and MW6 to assess the potential tidal influence on groundwater levels.
 - An additional round of groundwater monitoring for heavy metals, pH and acidity at MW1, MW4, and MW6, including speciated arsenic.

10. References

- ANZG. (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.
- ASSMAC. (1998). *Acid Sulfate Soil Manual*. Wollonbar, NSW: Acid Sulfate Soil Management Advisory Committee.
- BOM. (2025). Australian Groundwater Explorer Database. Bureau of Meteorology. Retrieved February 26, 2024, from Australian Groundwater Explorer: <http://www.bom.gov.au/water/groundwater/explorer/>
- GHD. (2025). *2-4 Kayuga Close, Caves Beach | Sampling, Analysis, and Quality Plan (Rev A, 12/05/2025)*. Sydney: GHD Pty Ltd.
- Hinwood, A, et. al. (2006). Acid sulphate soil disturbance and metals in groundwater: Implications for human exposure through home grown produce. *Environmental Pollution*, 143(1), 100-105.
doi:10.1016/j.envpol.2005.11.014
- JK Environments. (2023a). *Report to Health Infrastructure on Preliminary (Stage 1) Site Investigation at 2-4 Kayuga Close, Caves Beach, NSW*.
- JK Environments. (2023b). *Report to Health Infrastructure on Hazardous Building Materials Survey at 2-4 Kayuga Close, Caves Beach, NSW*.
- JK Environments. (2023c). *Report to Health Infrastructure on Preliminary Intrusive Investigation at 2-4 Kayuga Close, Caves Beach, NSW*.
- Naylor, S., Chapman, G., Atkinson, G., Murphy, C., Tulau, M., Flewin, T., . . . Morand, D. (1998). *Guidelines for the Use of Acid Sulfate Soil Risk Maps*. Sydney: Department of Land and Water Conservation. Retrieved from <https://datasets.seed.nsw.gov.au/dataset/acid-sulfate-soils-risk0196c>
- NEPC. (2013). *National Environmental Protection (Assessment of Site Contamination) Measure - Schedule B1: Guideline on Investigation Levels for Soil and Groundwater*. National Environment Protection Council.
- NEPC. (2013). *National Environmental Protection (Assessment of Site Contamination) Measure - Schedule B2: Guideline on Site Characterisation*. National Environment Protection Council.
- NHMRC. (2011 [Updated 2022]). *Australian Drinking Water Guidelines 6*. National Health and Medical Research Council.
- NSW Environment and Heritage. (2025). *Environment and Heritage*. Retrieved from Acid sulfate soils: <https://www.environment.nsw.gov.au/topics/land-and-soil/soil-degradation/acid-sulfate-soils>
- NSW EPA. (2014a). *Waste Classification Guidelines, Part 1: Classifying waste*.
- NSW EPA. (2014b). *Waste Classification Guidelines - Part 4: Acid Sulfate Soils*. Sydney: NSW EPA.
- NSW EPA. (2020). *Consultants reporting on contaminated land - Contaminated Land Guidelines*. Parramatta: NSW Environment Protection Authority.
- Simpson, S. L., Mosley, L., Batley, G. E., & Shand, P. (2018). *National Acid Sulfate Soils Guidance: Guidelines for the dredging of acid sulfate soil sediments and associated dredge spoil management*. Canberra, ACT: Department of Agriculture and Water Resources.
- Standards Australia. (2017). *AS1726-2017 Geotechnical Site Investigation*.
- Water Quality Australia. (2018). *National Acid Sulfate Soils Guidance: Guidance for the dewatering of acid sulfate soils in shallow groundwater environments*. Canberra: Australian Government Department of Agriculture and Water Resources .
- WillyWeather. (2025). *Newcastle Tide Times and Heights*. Retrieved June 03, 2025, from <https://tides.willyweather.com.au/nsw/hunter/newcastle.html>

Appendices

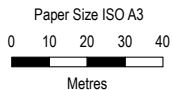
Appendix A

Figures

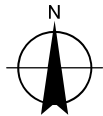


Data Disclaimer

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Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



Health Infrastructure
NSW Ambulance Infrastructure Program
2-4 Kayuga Cl, Caves Beach, Newcastle, NSW, 2281

Project No. 12657833
Revision No. A
Date 29/04/2025

Site locality

FIGURE 1



Legend

- Site boundary
- Cadastre
- Earthwork extent
- Soft standing extent
- Building footprint
- Carpark / driveway / paved area

Data Disclaimer

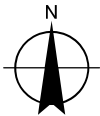
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Paper Size ISO A3

0 3 6 9 12

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



Health Infrastructure
NSW Ambulance Infrastructure Program
2-4 Kayuga Cl, Caves Beach, Newcastle, NSW, 2281

Project No. 12657833
Revision No. A
Date 8/05/2025

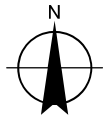
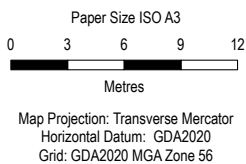
Site layout

FIGURE 2



Data Disclaimer

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Health Infrastructure
NSW Ambulance Infrastructure Program
2-4 Kayuga Cl, Caves Beach, Newcastle, NSW, 2281

Project No. 12657833
Revision No. A
Date 8/05/2025

Sample locations

FIGURE 3

Appendix B

Borelogs

DRILLING					MATERIAL					COMMENTS	
Scale (m)	Drilling Method	Casing	Water	Samples & Field Tests	Depth (m) (RL m)	Graphic Log	USC Symbol	Description	Moisture Condition	Consistency / Relative Density	Comments & Observations
	CC				0.17 (2.43)		-	CONCRETE: .		-	
				ES: 0.50-0.95m PID = 0 ppm			-	[FILL] SAND: medium to coarse grained, pale grey (FILL).	W	-	
1				B: 1.00-1.45m D: 1.00-1.45m ES: 1.00-1.45m PID = 0.1 ppm	1.00 (1.60)		CL	CLAY: low plasticity, dark brown; with sand, fine to coarse grained; trace gravel (ALLUVIAL SOIL).	w = LL	St	
				D: 1.50-1.95m ES: 1.50-1.70m SPT: 1.50-1.95 m Q/1/1 N=2 PID = 0.1 ppm	1.50 (1.10)		SC	Clayey Silty SAND: fine to coarse grained, black, dark brown; Clay, low plasticity; trace gravel (ALLUVIAL SOIL).		VL	
2					2.00 (0.60)			SAND: fine to coarse grained, pale grey, dark grey (ALLUVIAL SOIL).			1.40 m, groundwater was measured at 1.40m bgl in nearby existing well at BH01 1.50 m, organic odour 1.50 m, SPT recovery 450mm
	AD/T	Nli Casing	Groundwater Not Observed	ES: 3.00-3.20m PID = 0.1 ppm					W	L	
3											
							SP				
4											
										VL	
5											

Client Name: NSW Government Health Infrastructure

Project Name: NSW Ambulance Infrastructure Program – Geotechnical and Contamination Consultant Services

Location: 2-4 Kayuga Close, Caves Beach NSW 2281

Position: 372911.8 E 6337061.9 N GDA2020 / MGA zone 56

Rig Type: Comacchio GEO 306

Date Started: 19/5/2025

BOREHOLE LOG SHEET

HOLE No. CB-BH01

SHEET 2 OF 2

Surface RL: 2.60 m AHD

Angle from Horizontal/Azimuth: 90°/-

Contractor: Stratacore

Driller: BM

Checked By: AM

Date: 8/7/2025

Mounting: Track

Logged by: UT

DRILLING					MATERIAL					COMMENTS	
Scale (m)	Drilling Method	Casing	Water	Samples & Field Tests	Depth (m) (RL m)	Graphic Log	USC Symbol	Description	Moisture Condition	Consistency / Relative Density	Comments & Observations
								[FILL / TOPSOIL / COBBLES / BOULDERS / -] SOIL NAME: primary component plasticity / particle / behavioural characteristics, colour, secondary component, minor component, structure (ORIGIN) OR ROCK NAME: grain size and type, colour, fabric, texture, inclusions or minor components, strength, weathering, alteration, defects (INTERPRETED STRATIGRAPHIC UNIT / GEOLOGICAL STRUCTURE)			
				D: 5.00-5.20m				SAND: fine to coarse grained, pale grey, dark grey (ALLUVIAL SOIL). 5.00m with shell fragments, trace rootlets.			5.00 m, organic odour
6	AD/T	Nil Casing	Groundwater Not Observed				SP		W	VL	
7										L	
										MD	
8					8.00 (-5.40)			CB-BH01 terminated at 8.00m. Target depth Backfilled at completion			
9											
10											

DRILLING					MATERIAL					COMMENTS	
Scale (m)	Drilling Method	Casing	Water	Samples & Field Tests	Depth (m) (RL m)	Graphic Log	USC Symbol	Description	Moisture Condition	Consistency / Relative Density	Comments & Observations
	CC						-	CONCRETE: .			
					0.20 (2.40)		-	[FILL] Clayey SAND: fine to coarse grained, brown; Clay, low plasticity; with gravel, sub-rounded to angular (FILL).	W		
				D: 0.50-0.95m SPT: 0.50-0.95 m 8/9/7 N=16	0.50 (2.10)		-	[FILL] Sandy CLAY: low plasticity, brown-pale brown and grey; Sand, fine to coarse grained; with gravel (FILL).	w = LL	-	0.50 m, SPT recovery 450mm
1				D: 1.00-1.45m ES: 1.00m SPT: 1.00-1.45 m 5/5/5 N=10	1.00 (1.60)		-	[FILL] Clayey SAND: fine to coarse grained, brown and grey; Clay, low plasticity (FILL).	W		1.00 m, SPT recovery 450mm
				D: 1.50-1.95m ES: 1.50m SPT: 1.50-1.95 m 4/5/3 N=8 ES: 1.50m	1.50 (1.10)		SP	1.45m becoming pale grey Clayey Silty SAND: fine to coarse grained, black; Clay, low plasticity; trace rootlets (ALLUVIAL SOIL).	W	L	1.40 m, groundwater was measured at 1.40m deep in nearby existing BH01 1.50 m, organic odour 1.50 m, SPT recovery 450mm
2				ES: 2.00m SPT: 2.00-2.45 m 2/1/4 N=5 D: 2.00-2.45m	2.00 (0.60)			SAND: fine to coarse grained, very dark grey; with clay, low plasticity; with shell fragments (ALLUVIAL SOIL).			2.00 m, SPT recovery 450mm
	AD/T	NII Casing	Groundwater Not Observed								
3				D: 3.00-3.45m SPT: 3.00-3.45 m 2/3/5 N=8 ES: 3.00m						L	3.00 m, SPT recovery 450mm
									W		
4				D: 4.00-4.50m							
				ES: 4.50m SPT: 4.50-4.95 m 2/1/2 N=3						VL	4.50 m, SPT recovery 450mm
5											

BOREHOLE LOG SHEET

HOLE No. CB-BH01A

SHEET 2 OF 2

Angle from Horizontal/Azimuth: 90°/-

Driller: BM

Checked By: AM

Logged by: UT

Date: 8/7/2025

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See GHD standard sheets for details of abbreviations & basis of descriptions

Project Number:

12657833

BOREHOLE LOG SHEET

HOLE No. CB-BH02

SHEET 1 OF 2

Angle from Horizontal/Azimuth: 90°/-

Checked By: AM

Date: 8/7/2025

DRILLING					MATERIAL					COMMENTS	
Scale (m)	Drilling Method	Casing	Water	Samples & Field Tests	Depth (m) (RL m)	Graphic Log	USC Symbol	Description	Moisture Condition	Consistency / Relative Density	Comments & Observations
1	CC	AD/T	Nil Casing	Groundwater Not Observed	0.20 (2.60)		-	CONCRETE: .	w = LL	-	0.50 m, slight organic odour 0.50 m, SPT recovery 60mm
								[FILL] Gravelly Sandy CLAY: low plasticity, pale brown; Gravel, fine, angular to sub-rounded; Sand, fine to coarse grained (FILL).			
	[FILL] CLAY: low plasticity, black mottled dark brown, pale brown; trace sand; trace gravel (FILL).										
	Sandy CLAY: low plasticity, pale brown and grey; Sand, fine to medium grained (ALLUVIAL SOIL).										
	2							AD/T	Nil Casing	Groundwater Not Observed	1.00 (1.80)
3	AD/T	Nil Casing	Groundwater Not Observed	2.50-2.95m ES: 2.50-2.95m U75: 2.50m SPT: 2.50-2.95 m 2/3/2 N=5 PID = 0.4 ppm	4.00 (-1.20)	SP	SAND: fine to coarse grained, pale grey; with shell fragments (ALLUVIAL SOIL).				2.50 m, SPT recovery 450mm
4	WB	Nil Casing	Groundwater Not Observed	D: 4.00-5.50m	4.00 (-1.20)	SP	SAND: fine to coarse grained, pale grey; with shell fragments (ALLUVIAL SOIL).				

Project Number:
12657833

BOREHOLE LOG SHEET

HOLE No. CB-BH02

SHEET 2 OF 2

Angle from Horizontal/Azimuth: 90°/-

Checked By: AM

Date: 8/7/2025

GHD St Leonards
Level 11, 558 Pacific Highway,
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Project Number:

12657833

DRILLING					MATERIAL					COMMENTS	
Scale (m)	Drilling Method	Casing	Water	Samples & Field Tests	Depth (m) (RL m)	Graphic Log	USC Symbol	Description	Moisture Condition	Consistency / Relative Density	Comments & Observations
1	CC	Nli Casing	Groundwater Not Observed	D: 0.50-0.70m ES: 0.50-0.95m SPT: 0.50-0.95 m 4/9/8 N=17 PID = 0.4 ppm	0.12 (2.68)		-	CONCRETE: .		-	0.50 m, slight organic odour 0.50 m, SPT recovery 450mm 1.00 m, SPT recovery 450mm <

DRILLING					MATERIAL					COMMENTS	
Scale (m)	Drilling Method	Casing	Water	Samples & Field Tests	Depth (m) (RL m)	Graphic Log	USC Symbol	Description	Moisture Condition	Consistency / Relative Density	Comments & Observations
								[FILL / TOPSOIL / COBBLES / BOULDERS / -] SOIL NAME: primary component plasticity / particle / behavioural characteristics, colour, secondary component, minor component, structure (ORIGIN) OR ROCK NAME: grain size and type, colour, fabric, texture, inclusions or minor components, strength, weathering, alteration, defects (INTERPRETED STRATIGRAPHIC UNIT / GEOLOGICAL STRUCTURE)			
	AD/T	Nil Casing	Groundwater Not Observed	D: 5.50-5.70m			SP	SAND: fine to coarse grained, dark grey; trace clay; trace rootlets (ALLUVIAL SOIL).	W	VD	5.50 m, organic odour, dark brown staining
6								5.50m becoming very dark brown			
7				D: 7.00-7.20m				7.00m becoming dark brown			7.00 m, organic odour
8				D: 8.00-8.20m							8.00 m, organic odour
				SPT: 8.50-8.65 m 0 for 150 mm N=ref	8.50 (-5.70) 8.65 (-5.85)		SC	Clayey SAND: medium to coarse grained, grey-brown; Clay, low plasticity (EXTREMELY WEATHERED MATERIAL).			8.50 m, SPT recovery 0mm
9								CB-BH03 terminated at 8.65m. Target depth Backfilled at completion			
10											

DRILLING					MATERIAL					COMMENTS	
Scale (m)	Drilling Method	Casing	Water	Samples & Field Tests	Depth (m) (RL m)	Graphic Log	USC Symbol	Description	Moisture Condition	Consistency / Relative Density	Comments & Observations
	CC						-	CONCRETE: .		-	
				D: 0.50-0.95m SPT: 0.50-0.95 m 7/8/7 N=15 D: 0.50m	0.20 (2.70)		-	[FILL] Clayey SAND: fine to coarse grained, brown and grey; Clay, low plasticity; with gravel, sub-rounded to angular (FILL).			0.50 m, SPT recovery 450mm
1				D: 1.00-1.45m ES: 1.00m SPT: 1.00-1.45 m 5/3/4 N=7 D: 1.00m			-	1.00m No gravel	W	-	1.00 m, SPT recovery 450mm
				D: 1.50-1.95m SPT: 1.50-1.95 m 3/4/4 N=8	1.50 (1.40)		CL	Sandy CLAY: low plasticity, pale grey to very dark grey with black; Sand, fine to coarse grained (ALLUVIAL SOIL).	w = LL	F	1.50 m, SPT recovery 450mm
2				D: 2.00-2.45m SPT: 2.00-2.45 m 4/5/5 N=10 B: 2.00-2.80m ES: 2.00m	1.95 (0.95)			SAND: fine to coarse grained, dark grey; trace silt; with shell fragments (ALLUVIAL SOIL).			2.00 m, SPT recovery 450mm
	AD/T	NII Casing	Groundwater Not Observed								
3				D: 3.00-3.45m SPT: 3.00-3.45 m 2/7/6 N=13 ES: 3.00m			SP		M	MD	3.00 m, SPT recovery 450mm
				D: 4.00-4.45m SPT: 4.00-4.45 m 3/7/13 N=20 ES: 4.00m							4.00 m, organic odour 4.00 m, SPT recovery 450mm
4											
5											

BOREHOLE LOG SHEET

HOLE No. CB-BH03A

SHEET 2 OF 2

Angle from Horizontal/Azimuth: 90°/-

Checked By: AM

Date: 8/7/2025

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Level 11, 558 Pacific Highway,
St Leonards, New South Wales, 2065



Project Number:

12657833

Appendix C

Result tables



Appendix C
Table C1
Soil Analytical Results Compared Against Human Health Criteria

Health Infrastructure
Caves Beach
NSW Ambulance Infrastructure Program

	Inorganics	Asbestos	Metals								BTEXN							TRH - NEPM 20			
	Moisture (%)	ACM - Comment	Arsenic	Cadmium	Chromium (II+VI)	Copper	Lead	Mercury	Nickel	Zinc	Naphthalene (value used in F2 calc)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction
EQL	1	-	2	0.4	2	5	5	0.1	2	5	0.5	0.1	0.1	0.1	0.1	0.2	0.3	20	20	50	50
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil			3,000	900	2	240,000	1,500	730	6,000	400,000											
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand												3					230	260 370 630			
>=0m, <1m																		260			
>=1m, <2m																		370			
>=2m, <4m																		630			
>=4m																					

Site ID	Location	Date	Field ID	Depth	Sample Type																					
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	15	NAD ^{#1}	6.6	<0.4	5.7	12	9.3	<0.1	<5	27	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50
			CB-BH01_1-1.45	1 - 1.45	Normal	-	NAD ^{#1}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	22	-	9.1	<0.4	<5	<5	<5	<0.1	14	46	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	18	NAD ^{#1}	6.6	<0.4	11	11	13	<0.1	<5	23	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50
			CB-BH02_0.9-1	0.9 - 1	Normal	-	NAD ^{#1}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	24	NAD ^{#1}	6.6	<0.4	6.8	11	17	<0.1	16	47	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	16	-	2.7	<0.4	5.4	<5	<5	<0.1	<5	<5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50
			QC403	2.5 - 2.95	Field_D	16	-	2.7	<0.4	5.4	<5	<5	<0.1	<5	<5	-	-	-	-	-	-	-	-	-	-	-
			QC404	2.5 - 2.95	Interlab_D	16.0	-	<5	<1	5	<5	<5	<0.1	2	<5	-	-	-	-	-	-	-	-	-	-	-
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	20	NAD ^{#1}	<2	<0.4	5.5	6.0	6.6	<0.1	<5	43	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50

Statistics																							
Number of Results	8	6	8	8	8	8	8	8	8	8	8	6	6	6	6	6	6	6	6	6	6	6	6
Number of Detects	8	6	6	0	7	4	0	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	15	1	<2	<0.4	5	<5	<5	<0.1	2	<5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<50
Minimum Detect	15	1	2.7	ND	5	6	6.6	ND	2	23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	24	1	9.1	<1	11	12	17	<0.1	16	47	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<50	<50
Maximum Detect	24	1	9.1	ND	11	12	17	ND	16	47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	18	1	4.7	0.24	5.9	6.2	7	0.05	5.6	24	0.25	0.05	0.05	0.05	0.05	0.1	0.15	10	10	25	25	25	25
Geometric Average *	18	1	3.8	0.22	5.5	4.9	5.2	0.05	3.8	13	0.25	0.05	0.05	0.05	0.05	0.1	0.15	10	10	25	25	25	25
Median Concentration *	17	1	4.65	0.2	5.45	4.25	4.55	0.05	2.5	25	0.25	0.05	0.05	0.05	0.05	0.1	0.15	10	10	25	25	25	25
Standard Deviation *	3.3	0	2.8	0.11	2.4	4.4	5.6	0	5.9	20	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1.2	1	2.1	1.4	1.5	2.1	2.3	1	2.3	4	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	20.58	1	6.632	0.309	7.511	9.186	10.76	0.05	9.482	37.51	0.25	0.05	0.05	0.05	0.05	0.1	0.15	10	10	25	25	25	25
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	100	100	75	0	88	50	50	0	38	62	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	0	0	25	100	12	50	50	100	62	38	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected

Environmental Standards

2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

2013, NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand



Appendix C
Table C1
Soil Analytical Results Compared Against Human Health Criteria

Health Infrastructure
Caves Beach
NSW Ambulance Infrastructure Program

	13			TRH - NEPM 1999					PAHs - standard 16												
	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	100	100	100	20	20	50	50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																					
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																					
>=0m, <1m																					
>=1m, <2m																					
>=2m, <4m																					
>=4m																					

Site ID	Location	Date	Field ID	Depth	Sample Type																			
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<100	<100	<100	<20	<20	64	<50	64	<0.5	<0.5	<0.5	<0.5	0.5	0.7	0.6	<0.5	<0.5	<0.5	<0.5
			CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			QC403	2.5 - 2.95	Field_D	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			QC404	2.5 - 2.95	Interlab_D	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Statistics																								
Number of Results	6	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Number of Detects	0	0	0	0	0	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
Minimum Concentration	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Minimum Detect	ND	ND	ND	ND	ND	64	ND	64	ND	ND	ND	ND	0.5	0.7	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<100	<100	<100	<20	<20	64	<50	64	<0.5	<0.5	<0.5	<0.5	0.5	0.7	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Maximum Detect	ND	ND	ND	ND	ND	64	ND	64	ND	ND	ND	ND	0.5	0.7	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	50	50	50	10	10	32	25	32	0.25	0.25	0.25	0.25	0.28	0.31	0.29	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Geometric Average *	50	50	50	10	10	29	25	29	0.25	0.25	0.25	0.25	0.27	0.28	0.28	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Median Concentration *	50	50	50	10	10	25	25	25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Standard Deviation *	0	0	0	0	0	16	0	16	0	0	0	0	0.088	0.16	0.12	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1.5	1	1.5	1	1	1	1	1.3	1.4	1.4	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	50	50	50	10	10	44.6	25	44.6	0.25	0.25	0.25	0.25	0.34	0.413	0.377	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	17	0	17	0	0	0	0	12	12	12	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	83	100	83	100	100	100	100	88	88	88	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected

Environmental Standards

2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

2013, NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand



Appendix C
Table C1
Soil Analytical Results Compared Against Human Health Criteria

Health Infrastructure
Caves Beach
NSW Ambulance Infrastructure Program

								OC Pesticides													
	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ) (half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	Organochlorine pesticides EPAV/c	Other organochlorine pesticides EPAV/c	4,4'-DDE	p-BHC	Aldrin	Aldrin + Dieldrin	p-BHC	Chlordane	p-BHC	4,4'-DDD	4,4'-DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)
EQL	mg/kg 0.5	mg/kg 0.5	mg/kg 0.5	mg/kg 0.5	mg/kg 0.5	mg/kg 0.5	mg/kg 0.5	mg/kg 0.1	mg/kg 0.1	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.1	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil				4,000	40	40	40						45		530				3,600		
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																					
>=0m, <1m																					
>=1m, <2m																					
>=2m, <4m																					
>=4m																					

Site ID	Location	Date	Field ID	Depth	Sample Type																			
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<0.5	<0.5	<0.5	1.8	0.6	0.9	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05
			CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-
			QC403	2.5 - 2.95	Field_D	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-
			QC404	2.5 - 2.95	Interlab_D	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05

Statistics																							
Number of Results	8	8	8	8	8	8	8	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Number of Detects	0	0	0	1	1	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Concentration	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Minimum Detect	ND	ND	ND	1.8	0.6	0.6	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Maximum Concentration	<0.5	<0.5	<0.5	1.8	0.6	0.9	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Maximum Detect	ND	ND	ND	1.8	0.6	0.9	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Average Concentration *	0.25	0.25	0.25	0.44	0.29	0.64	1.2	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	
Geometric Average *	0.25	0.25	0.25	0.32	0.28	0.63	1.2	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	
Median Concentration *	0.25	0.25	0.25	0.25	0.25	0.6	1.2	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	
Standard Deviation *	0	0	0	0.55	0.12	0.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Geometric Standard Deviation *	1	1	1	2	1.4	1.2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
95% UCL (Student's-t) *	0.25	0.25	0.25	0.811	0.377	0.709	1.2	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Detects	0	0	0	12	12	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Non-Detects	100	100	100	88	88	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

* A Non Detect Multiplier of 0.5 has been applied.

Comments
#1 NAD - No Asbestos Detected

Environmental Standards
2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil
2013, NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand



	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	p-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Thiokhion	Azinphos methyl	Boistar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon
EQL	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	mg/kg 0.05	µg/kg 50	mg/kg 0.05	mg/kg 0.5	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil			100				50		80,000	2,500	160					2,000					
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																					
>=0m, <1m																					
>=1m, <2m																					
>=2m, <4m																					
>=4m																					

Site ID	Location	Date	Field ID	Depth	Sample Type																						
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	
			CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			QC403	2.5 - 2.95	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			QC404	2.5 - 2.95	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	

Statistics																								
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	25	0.025	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1
Geometric Average *	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	25	0.025	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1
Median Concentration *	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	25	0.025	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	25	0.025	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected

Environmental Standards

2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil

2013, NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand



Appendix C
Table C1
Soil Analytical Results Compared Against Human Health Criteria

	OP Pesticides																				
	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Ethyl Parathion (or Parathion)	Phorate	Priniphos-methyl	Pyrazophos	Fenchlorphos (Ronneil)
EQL	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 2	mg/kg 0.2	mg/kg 2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil																					
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand																					
>=0m, <1m																					
>=1m, <2m																					
>=2m, <4m																					
>=4m																					

Site ID	Location	Date	Field ID	Depth	Sample Type																				
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	
			CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			QC403	2.5 - 2.95	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			QC404	2.5 - 2.95	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	

Statistics																					
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	0.1	0.1	0.1	0.1	0.1
Geometric Average *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	0.1	0.1	0.1	0.1	0.1
Median Concentration *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	0.1	0.1	0.1	0.1	0.1
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	0.1	0.1	0.1	0.1	0.1
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected

Environmental Standards

2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil
2013, NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand



Appendix C
Table C1
Soil Analytical Results Compared Against Human Health Criteria

	PCBs										
	Terbufos	Trichloronate	Tetrachlorvinphos	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	mg/kg 0.2	mg/kg 0.2	mg/kg 0.2	mg/kg 0.1	mg/kg 0.1	mg/kg 0.1	mg/kg 0.1	mg/kg 0.1	mg/kg 0.1	mg/kg 0.1	mg/kg 0.1
EQL											
NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil											7
NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand											
>=0m, <1m											
>=1m, <2m											
>=2m, <4m											
>=4m											

Site ID	Location	Date	Field ID	Depth	Sample Type										
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	-	-	-	-	-	-	-	-	-	-
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
			CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-	-	-	-	-
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	-	-	-	-	-	-	-	-	-	-
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	-	-	-	-	-	-	-	-	-	-
			QC403	2.5 - 2.95	Field_D	-	-	-	-	-	-	-	-	-	-
			QC404	2.5 - 2.95	Interlab_D	-	-	-	-	-	-	-	-	-	-
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Statistics															
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Geometric Average *	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Median Concentration *	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected

Environmental Standards

2013, NEPM 2013 Table 1A(1) HILs Comm/Ind D Soil
2013, NEPM 2013 Table 1A(3) Comm/Ind D Soil HSL for Vapour Intrusion, Sand



Appendix C
Table C2
Soil Analytical Results Compared Against
NSW Waste Classification Guidelines

	Inorganics	Asbestos	Metals								BTEXN							TRH - NEPM 2013				
	Moisture (%)	ACM - Comment	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Naphthalene (value used in F2 calc)	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)
EQL	1	-	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
NSW EPA (2014) Special Waste (Asbestos)			2	0.4	2	5	5	0.1	2	5	0.5	0.1	0.1	0.1	0.1	0.2	0.3	20	20	50	50	100
NSW EPA (2014) General Solid Waste CT1 (No Leaching)			100	20	100		100	4	40			10	288	600			1,000					
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)			400	80	400		400	16	160			40	1,152	2,400			4,000					
NSW EPA (2014) General Solid Waste SCC1 (with TCLP)			500	100	1,900		1,500	50	1,050			18	518	1,080			1,800					
NSW EPA (2014) Restricted Solid Waste SCC2 (with TCLP)			2,000	400	7,600		6,000	200	4,200			72	2,073	4,320			7,200					

Site ID	Location	Date	Field ID	Depth	Sample Type																							
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	15	NAD ^{#1}	6.6	<0.4	5.7	12	9.3	<0.1	<5	27	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	
			CB-BH01_1-1.45	1 - 1.45	Normal	-	NAD ^{#1}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	22	-	9.1	<0.4	<5	<5	<5	<0.1	14	46	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	18	NAD ^{#1}	6.6	<0.4	11	11	13	<0.1	<5	23	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	
			CB-BH02_0.9-1	0.9 - 1	Normal	-	NAD ^{#1}	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	24	NAD ^{#1}	6.6	<0.4	6.8	11	17	<0.1	16	47	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	16	-	2.7	<0.4	5.4	<5	<5	<0.1	<5	<5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	
			QC403	2.5 - 2.95	Field_D	16	-	2.7	<0.4	5.4	<5	<5	<0.1	<5	<5	-	-	-	-	-	-	-	-	-	-	-	-	
			QC404	2.5 - 2.95	Interlab_D	16.0	-	<5	<1	5	<5	<5	<0.1	2	<5	-	-	-	-	-	-	-	-	-	-	-	-	
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	20	NAD ^{#1}	<2	<0.4	5.5	6.0	6.6	<0.1	<5	43	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	

Statistics																						
Number of Results	8	6	8	8	8	8	8	8	8	8	6	6	6	6	6	6	6	6	6	6	6	
Number of Detects	8	6	6	0	7	4	4	0	3	5	0	0	0	0	0	0	0	0	0	0	0	
Minimum Concentration	15	1	<2	<0.4	5	<5	<5	<0.1	2	<5	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	
Minimum Detect	15	1	2.7	ND	5	6	6.6	ND	2	23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Maximum Concentration	24	1	9.1	<1	11	12	17	<0.1	16	47	<0.5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	
Maximum Detect	24	1	9.1	ND	11	12	17	ND	16	47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Average Concentration *	18	1	4.7	0.24	5.9	6.2	7	0.05	5.6	24	0.25	0.05	0.05	0.05	0.05	0.1	0.15	10	10	25	25	
Geometric Average *	18	1	3.8	0.22	5.5	4.9	5.2	0.05	3.8	13	0.25	0.05	0.05	0.05	0.05	0.1	0.15	10	10	25	25	
Median Concentration *	17	1	4.65	0.2	5.45	4.25	4.55	0.05	2.5	25	0.25	0.05	0.05	0.05	0.05	0.1	0.15	10	10	25	25	
Standard Deviation *	3.3	0	2.8	0.11	2.4	4.4	5.6	0	5.9	20	0	0	0	0	0	0	0	0	0	0	0	
Geometric Standard Deviation *	1.2	1	2.1	1.4	1.5	2.1	2.3	1	2.3	4	1	1	1	1	1	1	1	1	1	1	1	
95% UCL (Student's-t) *	20.58	1	6.632	0.309	7.511	9.186	10.76	0.05	9.482	37.51	0.25	0.05	0.05	0.05	0.05	0.1	0.15	10	10	25	25	
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Detects	100	100	75	0	88	50	50	0	38	62	0	0	0	0	0	0	0	0	0	0	0	
% of Non-Detects	0	0	25	100	12	50	50	100	62	38	100	100	100	100	100	100	100	100	100	100	100	
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected



Appendix C
Table C2
Soil Analytical Results Compared Against
NSW Waste Classification Guidelines

			TRH - NEPM 1999					PAHs - standard 16														
	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b+g)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	100	100	20	20	50	50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NSW EPA (2014) Special Waste (Asbestos)																						
NSW EPA (2014) General Solid Waste CT1 (No Leaching)			650				10,000					0.8										
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)			2,600				40,000					3.2										
NSW EPA (2014) General Solid Waste SCC1 (with TCLP)			650				10,000					10										
NSW EPA (2014) Restricted Solid Waste SCC2 (with TCLP)			2,600				40,000					23										

Site ID	Location	Date	Field ID	Depth	Sample Type																				
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<100	<100	<20	<20	64	<50	64	<0.5	<0.5	<0.5	<0.5	0.5	0.7	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			QC403	2.5 - 2.95	Field_D	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
			QC404	2.5 - 2.95	Interlab_D	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Statistics																							
Number of Results	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Number of Detects	0	0	0	0	1	0	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
Minimum Concentration	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Minimum Detect	ND	ND	ND	ND	64	ND	64	ND	ND	ND	ND	0.5	0.7	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<100	<100	<20	<20	64	<50	64	<0.5	<0.5	<0.5	<0.5	0.5	0.7	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Maximum Detect	ND	ND	ND	ND	64	ND	64	ND	ND	ND	ND	0.5	0.7	0.6	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	50	50	10	10	32	25	32	0.25	0.25	0.25	0.25	0.28	0.31	0.29	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Geometric Average *	50	50	10	10	29	25	29	0.25	0.25	0.25	0.25	0.27	0.28	0.28	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Median Concentration *	50	50	10	10	25	25	25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Standard Deviation *	0	0	0	0	16	0	16	0	0	0	0	0.088	0.16	0.12	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1.5	1	1.5	1	1	1	1	1.3	1.4	1.4	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	50	50	10	10	44.6	25	44.6	0.25	0.25	0.25	0.25	0.34	0.413	0.377	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	17	0	17	0	0	0	0	12	12	12	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	83	100	83	100	100	100	100	88	88	88	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected



Appendix C
Table C2
Soil Analytical Results Compared Against
NSW Waste Classification Guidelines

						OC Pesticides																
	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ) (half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	Organochlorine pesticides EPAV/c	Other organochlorine pesticides EPAV/c	4,4'-DDE	α-BHC	Aldrin	Aldrin + Dieldrin	β-BHC	Chlordane	γ-BHC	4,4'-DDD	4,4'-DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
NSW EPA (2014) Special Waste (Asbestos)																						
NSW EPA (2014) General Solid Waste CT1 (No Leaching)		200																				
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)		800																				
NSW EPA (2014) General Solid Waste SCC1 (with TCLP)		200																				
NSW EPA (2014) Restricted Solid Waste SCC2 (with TCLP)		800																				

Site ID	Location	Date	Field ID	Depth	Sample Type																			
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<0.5	1.8	0.6	0.9	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
			CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			QC403	2.5 - 2.95	Field_D	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			QC404	2.5 - 2.95	Interlab_D	<0.5	<0.5	<0.5	0.6	1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Statistics																							
Number of Results	8	8	8	8	8	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Number of Detects	0	1	1	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Concentration	<0.5	<0.5	<0.5	0.6	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Minimum Detect	ND	1.8	0.6	0.6	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Maximum Concentration	<0.5	1.8	0.6	0.9	1.2	<0.1	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	
Maximum Detect	ND	1.8	0.6	0.9	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Average Concentration *	0.25	0.44	0.29	0.64	1.2	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	
Geometric Average *	0.25	0.32	0.28	0.63	1.2	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	
Median Concentration *	0.25	0.25	0.25	0.6	1.2	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	
Standard Deviation *	0	0.55	0.12	0.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Geometric Standard Deviation *	1	2	1.4	1.2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
95% UCL (Student's-t) *	0.25	0.811	0.377	0.709	1.2	0.05	0.05	0.025	0.025	0.025	0.025	0.025	0.05	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Detects	0	12	12	100	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Non-Detects	100	88	88	0	0	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected



Appendix C
Table C2
Soil Analytical Results Compared Against
NSW Waste Classification Guidelines

	Endrin aldehyde	Endrin ketone	p-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Tokuthion	Azinphos methyl	Boistar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05	0.05	0.05	0.05	50	0.05	0.5	0.2	0.2	0.2	0.2	0.2	0.2	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
NSW EPA (2014) Special Waste (Asbestos)																						
NSW EPA (2014) General Solid Waste CT1 (No Leaching)													4									
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)													16									
NSW EPA (2014) General Solid Waste SCC1 (with TCLP)													7.5									
NSW EPA (2014) Restricted Solid Waste SCC2 (with TCLP)													30									

Site ID	Location	Date	Field ID	Depth	Sample Type																			
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2
			CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			QC403	2.5 - 2.95	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			QC404	2.5 - 2.95	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal		<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2

Statistics																								
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.025	0.025	0.025	0.025	0.025	25	0.025	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Geometric Average *	0.025	0.025	0.025	0.025	0.025	25	0.025	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Median Concentration *	0.025	0.025	0.025	0.025	0.025	25	0.025	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.025	0.025	0.025	0.025	0.025	25	0.025	0.25	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected



Appendix C
Table C2
Soil Analytical Results Compared Against
NSW Waste Classification Guidelines

	OP Pesticides																					
	Ethion	Ethoprop	Fenitrothion	Fensulfthion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Onethoate	Ethyl Parathion (or Parathion)	Phorate	Priniphos-methyl	Pyrazophos	Fenchlorphos (Rommel)	Terbufos	Trichloronate	Tetrachlorvinphos	Arochlor 1016	Arochlor 1221
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2	0.2	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
NSW EPA (2014) Special Waste (Asbestos)																						
NSW EPA (2014) General Solid Waste CT1 (No Leaching)																						
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)																						
NSW EPA (2014) General Solid Waste SCC1 (with TCLP)																						
NSW EPA (2014) Restricted Solid Waste SCC2 (with TCLP)																						

Site ID	Location	Date	Field ID	Depth	Sample Type																			
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-BH02	19 May 2025	CB-BH01_1.5-1.7	1.5 - 1.7	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1
	CB-BH03	19 May 2025	CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH03_0.5-0.95	0.5 - 0.95	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			QC403	2.5 - 2.95	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			QC404	2.5 - 2.95	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1

Statistics																							
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05
Geometric Average *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05
Median Concentration *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.05	0.05
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected



Appendix C
Table C2
Soil Analytical Results Compared Against
NSW Waste Classification Guidelines

	PCBs					
	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.1	0.1
NSW EPA (2014) Special Waste (Asbestos)						
NSW EPA (2014) General Solid Waste CT1 (No Leaching)						50
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)						50
NSW EPA (2014) General Solid Waste SCC1 (with TCLP)						50
NSW EPA (2014) Restricted Solid Waste SCC2 (with TCLP)						50

Site ID	Location	Date	Field ID	Depth	Sample Type						
Caves Beach	CB-BH01	19 May 2025	CB-BH01_0.5-0.95	0.5 - 0.95	Normal	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
			CB-BH01_1-1.45	1 - 1.45	Normal	-	-	-	-	-	-
			CB-BH01_1.5-1.7	1.5 - 1.7	Normal	-	-	-	-	-	-
	CB-BH02	19 May 2025	CB-BH02_0.5-0.95	0.5 - 0.95	Normal	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
			CB-BH02_0.9-1	0.9 - 1	Normal	-	-	-	-	-	-
	CB-BH03	19 May 2025	CB-BH03_0.5-0.95	0.5 - 0.95	Normal	-	-	-	-	-	-
			CB-BH03_2.5-2.95	2.5 - 2.95	Normal	-	-	-	-	-	-
			QC403	2.5 - 2.95	Field_D	-	-	-	-	-	-
			QC404	2.5 - 2.95	Interlab_D	-	-	-	-	-	-
	CB-SS01	19 May 2025	CB-SS01_0.05-0.1	0.05 - 0.1	Normal	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Statistics						
Number of Results	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0
Minimum Concentration	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Minimum Detect	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Maximum Detect	ND	ND	ND	ND	ND	ND
Average Concentration *	0.05	0.05	0.05	0.05	0.05	0.05
Geometric Average *	0.05	0.05	0.05	0.05	0.05	0.05
Median Concentration *	0.05	0.05	0.05	0.05	0.05	0.05
Standard Deviation *	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1
95% UCL (Student's-t) *	0.05	0.05	0.05	0.05	0.05	0.05
Number of Env Standard Exceedances	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Comments

#1 NAD - No Asbestos Detected



Appendix C

Table C3

Summary of Acid Sulfate Soil Results

Health Infrastructure

Caves Beach

NSW Ambulance Infrastructure Program

SUMMARY OF ACID SULFATE SOIL RESULTS

Location	Depth Interval (m bgl)	Sample date	Lab Report Number	ASS Occurrence on Map	pH-F (Field pH test)	pH-FOX (Field pH Peroxide test)	pH Change	Reaction Rate	pH KCl (pH Units)	Titrateable Actual Acidity (% pyrite S)	Chromium Reducible Sulfur (% S)	Chromium Reducible Sulfur (mole H+/t)	Net Acidity (excluding ANC) (% S)	Soil Type
Assessment Criteria ^{1*}										0.03	0.03	18	0.03	
CB-BH03A	1	29/05/2025	1226899	Not mapped	7.3	3.5	-3.8	1	7.0	<0.003	0.010	6.1	0.013	Clayey SAND
CB-BH03A	2	29/05/2025	1226899	Not mapped	6.7	2.7	-4.0	1	5.3	0.020	0.008	5.0	0.028	SAND
CB-BH03A	3	29/05/2025	1226899	Not mapped	7.5	3.9	-3.6	1	6.3	<0.003	0.025	16.0	0.028	SAND
CB-BH03A	4	29/05/2025	1226899	Not mapped	7.6	4.4	-3.2	1	-	-	-	-	-	SAND
CB-BH03A	5	29/05/2025	1226899	Not mapped	7.3	4.5	-2.8	1	-	-	-	-	-	SAND
CB-BH03A	6	29/05/2025	1226899	Not mapped	7.2	3.9	-3.3	1	6.0	0.010	0.041	25.0	0.051	SAND
CB-BH03A	7	29/05/2025	1226899	Not mapped	7.4	4.2	-3.2	1	-	-	-	-		SAND
CB-BH03A	8	29/05/2025	1226899	Not mapped	7.3	3.9	-3.4	1	5.9	<0.003	0.026	16.0	0.029	SAND

Assessment Criteria

A pH less than or equal to 4.5 is likely to indicate the presence of Actual Acid Sulfate Soils (AASS).

A final pH of less than 3.5 can be indicative of Potential Acid Sulfate Soils (PASS)

Table notes:

Exceedance Assessment criteria exceeded

Reaction rating 1 = Slight reaction
2 = Moderate reaction
3 = Strong reaction
4 = Extreme reaction

Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide

Bold Concentration exceeds ASSMAC (1998) action level

¹ Based on ASSMAC (1998) Acid Sulfate Soil Manual (coarse texture, sands, <5% clay)

- Not Analysed

pH_F Field pH (measured as received at the laboratory)

pH_{FOX} pH after oxidation with hydrogen peroxide

TAA Total Actual Acidity

S_{KCL} Potassium chloride extractable sulfur

S_{Cr} Chromium reducible sulfur

* Assumed texture category = Coarse



Appendix C
Table C4
Groundwater Analytical Results Compared Against Adopted Criteria

	Field data	Field Parameters					Metals								BTEXN						
	Standing Water Level																				
	m bTOC	pH units	µS/cm	mg/L	mV	°C	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.05	0.01	0.1	0.01	0.01	0.1	0.001	0.0001	0.001	0.001	0.001	0.0001	0.001	0.005	5	1	1	1	1	2	2
ADWG 2011 Health (v3.7 updated 2022)							0.01	0.002		2	0.01	0.001	0.02			1	800	300			600
ADWG 2011 Recreational (v3.7 updated 2022)							0.1	0.02		20	0.1	0.01	0.2			10	8,000	3,000			6,000
ANZG (2018) - FW - 95% (updated 26 July 2021)							0.013	0.0002	0.001	0.0014	0.0034	0.0006	0.011	0.008		950	180	80	350		

Site ID	Location	Date	Field ID	Sample Type																					
Caves Beach	MW1	19 May 2025	MW1	Normal	1.438	6.45	241.1	2.92	226.4	19.6	0.17	<0.0002	<0.001	<0.001	<0.001	<0.0001	<0.001	0.009	<10	<1	<1	<1	<1	<2	<3
Caves Beach			QC402	Interlab_D	-	-	-	-	-	-	0.179	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.009	<5	<1	<2	<2	<2	<2	<2
Caves Beach	MW4	19 May 2025	MW4	Normal	1.678	6.39	1,409	0.51	194.4	21.3	0.001	<0.0002	0.001	<0.001	<0.001	<0.0001	<0.001	0.008	<10	<1	<1	<1	<1	<2	<3
Caves Beach	MW6	19 May 2025	MW6	Normal	2.031	6.15	750	0.2	196	19.4	0.007	<0.0002	0.002	<0.001	<0.001	<0.0001	<0.001	0.014	<10	<1	<1	<1	<1	<2	<3
Caves Beach			QC401	Field_D	-	-	-	-	-	-	0.007	<0.0002	0.002	0.001	<0.001	<0.0001	<0.001	0.016	<10	<1	<1	<1	<1	<2	<3

Statistics																							
Number of Results	3	3	3	3	3	3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Number of Detects	3	3	3	3	3	3	5	0	3	1	0	0	0	5	0	0	0	0	0	0	0	0	0
Minimum Concentration	1.438	6.15	241.1	0.2	194.4	19.4	0.001	<0.0001	0.001	0.001	<0.001	<0.0001	<0.001	0.008	<5	<1	<1	<1	<1	<1	<2	<2	<2
Minimum Detect	1.438	6.15	241.1	0.2	194.4	19.4	0.001	ND	0.001	0.001	ND	ND	ND	0.008	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	2.031	6.45	1,409	2.92	226.4	21.3	0.179	<0.0002	0.002	0.001	<0.001	<0.0001	<0.001	0.016	<10	<1	<2	<2	<2	<2	<2	<3	<3
Maximum Detect	2.031	6.45	1,409	2.92	226.4	21.3	0.179	ND	0.002	0.001	ND	ND	ND	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	1.7	6.3	800	1.2	206	20	0.073	0.00009	0.0012	0.0006	0.0005	0.00005	0.0005	0.011	4.5	0.5	0.6	0.6	0.6	0.6	1	1.4	1.4
Geometric Average *	1.7	6.3	634	0.67	205	20	0.017	0.000087	0.001	0.00057	0.0005	0.00005	0.0005	0.011	4.4	0.5	0.57	0.57	0.57	0.57	1	1.4	1.4
Median Concentration *	1.678	6.39	750	0.51	196	19.6	0.007	0.0001	0.001	0.0005	0.0005	0.00005	0.0005	0.009	5	0.5	0.5	0.5	0.5	0.5	1	1.5	1.5
Standard Deviation *	0.3	0.16	586	1.5	18	1	0.093	0.000022	0.00076	0.00022	0	0	0	0.0036	1.1	0	0.22	0.22	0.22	0.22	0	0.22	0.22
Geometric Standard Deviation *	1.2	1	2.4	3.9	1.1	1.1	9.6	1.4	2	1.4	1	1	1	1.4	1.4	1	1.4	1.4	1.4	1.4	1	1.2	1.2
95% UCL (Student's-t) *	2.219	6.598	1,787	3.72	236	21.86	0.161	0.00011132	0.00192	0.00081318	0.0005	0.00005	0.0005	0.0146	5.566	0.5	0.813	0.813	0.813	0.813	1	1.613	1.613
Number of Env Standard Exceedances	0	0	0	0	0	0	2	0	3	0	0	0	0	5	0	0	0	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	2	0	3	0	0	0	0	5	0	0	0	0	0	0	0	0	0
% of Detects	100	100	100	100	100	100	100	0	60	20	0	0	0	100	0	0	0	0	0	0	0	0	0
% of Non-Detects	0	0	0	0	0	0	0	100	40	80	100	100	100	0	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	40	0	60	0	0	0	0	100	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	60	100	40	100	100	100	100	0	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

National Health and Medical Research Council, January 2022, ADWG 2011 Recreational (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)



Appendix C
Table C4
Groundwater Analytical Results Compared Against Adopted Criteria

	TRH - NEPM 2013							TRH - NEPM 1999					PAHs - standard								
	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo[b+g]fluoranthene	Benzo[k]fluoranthene	Benzo[g,h,i]perylene	Chrysene
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	20	20	50	50	100	100	100	20	50	100	50	50	1	1	1	1	0.5	1	1	1	1
ADWG 2011 Health (v3.7 updated 2022)																	0.01				
ADWG 2011 Recreational (v3.7 updated 2022)																	0.1				
ANZG (2018) - FW - 95% (updated 26 July 2021)															0.4		0.2				

Site ID	Location	Date	Field ID	Sample Type																				
Caves Beach	MW1	19 May 2025	MW1	Normal	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1
Caves Beach			QC402	Interlab_D	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Caves Beach	MW4	19 May 2025	MW4	Normal	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1
Caves Beach	MW6	19 May 2025	MW6	Normal	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1
Caves Beach			QC401	Field_D	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1

Statistics																								
Number of Results	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<50	<50	<1	<1	<1	<1	<0.5	<1	<1	<1	<1	<1	<1	<1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<100	<100	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	10	10	30	30	50	50	50	10	25	50	45	45	0.5	0.5	0.5	0.5	0.45	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Geometric Average *	10	10	29	29	50	50	50	10	25	50	44	44	0.5	0.5	0.5	0.5	0.44	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Median Concentration *	10	10	25	25	50	50	50	10	25	50	50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Standard Deviation *	0	0	11	11	0	0	0	0	0	0	11	11	0	0	0	0	0.11	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1.4	1.4	1	1	1	1	1	1	1.4	1.4	1	1	1	1	1.4	1	1	1	1	1	1	1
95% UCL (Student's-t) *	10	10	40.66	40.66	50	50	50	10	25	50	55.66	55.66	0.5	0.5	0.5	0.5	0.557	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

National Health and Medical Research Council, January 2022, ADWG 2011 Recreational (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)



Appendix C
Table C4
Groundwater Analytical Results Compared Against Adopted Criteria

Health Infrastructure
Caves Beach
NSW Ambulance Infrastructure Program

	16								OC Pesticides												
	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Organochlorine pesticides EPA Vic	Other organochlorine pesticides EPA Vic	4,4'-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4'-DDD	4,4'-DDT	DDT+DDE+DDD - Lab Calc	Dieldrin
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	1	1	1	1	1	1	1	0.5	2	2	0.2	0.2	0.2	0.2	0.2	2	0.2	0.2	0.2	0.2	0.2
ADWG 2011 Health (v3.7 updated 2022)								0.01						0.3		2			9		
ADWG 2011 Recreational (v3.7 updated 2022)														3		20			90		
ANZG (2018) - FW - 95% (updated 26 July 2021)		1.4			16	2										0.08			0.01		

Site ID	Location	Date	Field ID	Sample Type																				
Caves Beach	MW1	19 May 2025	MW1	Normal	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2
Caves Beach			QC402	Interlab_D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	-	-	-	-	-	-	-	-	-	-	-	-
Caves Beach	MW4	19 May 2025	MW4	Normal	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2
Caves Beach	MW6	19 May 2025	MW6	Normal	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2
Caves Beach			QC401	Field_D	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-

Statistics																								
Number of Results	5	5	5	5	5	5	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.45	1	1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1
Geometric Average *	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.44	1	1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1
Median Concentration *	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1	1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1
Standard Deviation *	0	0	0	0	0	0	0	0	0.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1.4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.557	1	1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	0.1	0.1	0.1	0.1	0.1
Number of Env Standard Exceedances	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

National Health and Medical Research Council, January 2022, ADWG 2011 Recreational (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)



Appendix C
Table C4
Groundwater Analytical Results Compared Against Adopted Criteria

	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Tokuthion	Azinphos methyl	Bolstar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	5	2	2	2	2	2	2	20	2	2
ADWG 2011 Health (v3.7 updated 2022)							10	0.3			300			30	10	2	10				
ADWG 2011 Recreational (v3.7 updated 2022)							100	3			3,000			300	100	20	100				
ANZG (2018) - FW - 95% (updated 26 July 2021)				0.02			0.2	0.09		0.1		0.2		0.02			0.01				

Site ID	Location	Date	Field ID	Sample Type																					
Caves Beach	MW1	19 May 2025	MW1	Normal	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<2	<2	<2	<20	<2	<2	<20	<2	<2	
Caves Beach			QC402	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caves Beach	MW4	19 May 2025	MW4	Normal	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<2	<2	<2	<20	<2	<2	<20	<2	<2	
Caves Beach	MW6	19 May 2025	MW6	Normal	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<2	<2	<2	<20	<2	<2	<20	<2	<2	
Caves Beach			QC401	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistics																								
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<2	<2	<2	<20	<2	<2	<20	<2	<2
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<5	<2	<2	<2	<20	<2	<2	<20	<2	<2
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5	1	1	1	1	10	1	1	10	1	1	1
Geometric Average *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5	1	1	1	1	10	1	1	10	1	1	1
Median Concentration *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5	1	1	1	1	10	1	1	10	1	1	1
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	2.5	1	1	1	1	10	1	1	10	1	1	1	1
Number of Env Standard Exceedances	0	0	0	3	0	0	0	3	0	3	0	3	0	3	0	3	0	3	3	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

National Health and Medical Research Council, January 2022, ADWG 2011 Recreational (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)



Appendix C
Table C4
Groundwater Analytical Results Compared Against Adopted Criteria

	OP Pesticides																				
	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenitrothion	Fensulfotthion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Ethyl Parathion (or Parathion)	Phorate	Pririmpfos-methyl	Pyrazophos
EQL	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	20	2	2	20	2
ADWG 2011 Health (v3.7 updated 2022)	4	5	7	4		4	1	7	10	7	70		0.7	5	2		1	20		90	20
ADWG 2011 Recreational (v3.7 updated 2022)	40	50	70	40		40	10	70	100	70	700		7	50	20		10	200		900	200
ANZG (2018) - FW - 95% (updated 26 July 2021)	0.01		0.15					0.2			0.05							0.004			

Site ID	Location	Date	Field ID	Sample Type																				
Caves Beach	MW1	19 May 2025	MW1	Normal	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<20	<2
Caves Beach			QC402	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Caves Beach	MW4	19 May 2025	MW4	Normal	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<20	<2
Caves Beach	MW6	19 May 2025	MW6	Normal	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<20	<2
Caves Beach			QC401	Field_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Statistics																						
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Concentration	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<20	
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Maximum Concentration	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<20	<2	<2	<20	
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Average Concentration *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1	1	10	
Geometric Average *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1	1	10	
Median Concentration *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1	1	10	
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
95% UCL (Student's-t) *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10	1	1	10	
Number of Env Standard Exceedances	3	0	3	0	0	0	3	3	0	0	3	0	3	0	0	0	3	3	0	0	0	
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

* A Non Detect Multiplier of 0.5 has been applied

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

National Health and Medical Research Council, January 2022, ADWG 2011 Recreational (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)



Appendix C
Table C4
Groundwater Analytical Results Compared Against Adopted Criteria

					PCBs							
	Fenchlorphos (Ronne)	Terbufos	Trichloronate	Tetrachlorvinphos	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	2	2	2	2	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
ADWG 2011 Health (v3.7 updated 2022)		0.9		100								
ADWG 2011 Recreational (v3.7 updated 2022)		9		1,000								
ANZG (2018) - FW - 95% (updated 26 July 2021)								0.0006		0.00003		

Site ID	Location	Date	Field ID	Sample Type												
Caves Beach	MW1	19 May 2025	MW1	Normal	<2	<2	<2	<2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Caves Beach			QC402	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-
Caves Beach	MW4	19 May 2025	MW4	Normal	<2	<2	<2	<2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Caves Beach	MW6	19 May 2025	MW6	Normal	<2	<2	<2	<2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Caves Beach			QC401	Field_D	-	-	-	-	-	-	-	-	-	-	-	-

Statistics																
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<2	<2	<2	<2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<2	<2	<2	<2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	1	1	1	1	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Geometric Average *	1	1	1	1	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Median Concentration *	1	1	1	1	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	1	1	1	1	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Number of Env Standard Exceedances	0	3	0	0	0	0	0	0	3	0	3	0	0	0	0	0
Number of Env Standard Exceedances (Detects Only)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
% of Detects at or above Env Standards	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Results Below Env Standards or Non-Detect	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied

Environmental Standards

National Health and Medical Research Council, January 2022, ADWG 2011 Health (v3.7 updated 2022)

National Health and Medical Research Council, January 2022, ADWG 2011 Recreational (v3.7 updated 2022)

Department of Agriculture and Water Resources, 2018 updated July 2021, ANZG (2018) - FW - 95% (updated 26 July 2021)

Appendix D

**Quality assurance and quality control
assessment**

QA/QC Data Validation Report

Two primary decision error-types may occur due to uncertainties or limitations in the project data set. These are:

- Type (a) Error: An investigation area may be deemed to pose no unacceptable risk, when in fact it does. This may occur if contamination is ‘missed’ due to limitations in the sampling plan, or if the project analytical data set is unreliable.
- Type (b) Error: An investigation area may be deemed to pose an unacceptable risk, when in fact it does not. This may occur if the project analytical data set is unreliable, due to inappropriate sampling, sample handling, or analytical procedures. An assessment will be made as to the likelihood of a decision error being made based on the results of a QA/QC assessment and the closeness of the data to assessment criteria. Additionally, statistical methods can be utilised, where applicable, such as 95% upper confidence limit calculations.

To minimise the potential for decision errors, data quality indicators (DQIs) for completeness, comparability, representativeness, precision and accuracy have been used.

D-1 Data quality indicators

Data generated during this investigation must be appropriate to allow decisions to be made with confidence. Specific limits for this investigation have been adopted in accordance with guidance from the AS4482.1 which includes appropriate indicators of data quality (data quality indicators [DQIs] used to assess QA/QC, and GHD’s Standard Field Operating Procedures).

To assess the usability of the data prior to making decisions, the data is assessed against pre-determined DQIs. The DQIs including precision, accuracy, representativeness, comparability and completeness, will be reviewed at the completion of the investigation works to assess for the presence of decision errors.

The pre-determined DQIs established for the investigation are discussed below and shown in Table D1.

- Precision - measures the reproducibility of measurements under a given set of conditions. The precision of the laboratory data and sampling techniques is assessed by calculating the Relative Percentage Difference (RPD) of duplicate samples.
- The relative percentage differences (RPDs) are to be calculated for all primary and field duplicate pairs and will be considered acceptable based on the following RPD limits:
 - $\pm 30\%$ for inorganic analytes
 - $\pm 50\%$ for organic analytes
- Accuracy - measures the bias in a measurement system. The accuracy of the laboratory data that is generated during this investigation is a measure of the closeness of the analytical results obtained by a method to the ‘true’ (or standard) value. Accuracy is assessed by reference to the analytical results of laboratory control samples, laboratory spikes and analyses against reference standards. The nominal “acceptance limits” on laboratory control samples are defined in Table D1.
- Representativeness - expresses the degree to which sample data accurately and precisely represent a characteristic of a population or an environmental condition. Representativeness is achieved by collecting samples on a representative basis across the site, and by using an adequate number of sample locations to characterise the site to the required accuracy.
- Comparability - expresses the confidence with which one data set can be compared with another. This is achieved through maintaining a level of consistency in techniques used to collect samples; ensuring analysing laboratories use consistent analysis techniques and reporting methods.
- Completeness - is defined as the percentage of measurements made which are judged to be valid measurements.

Table D1 Summary of quality assurance / quality control criteria as (applicable) – all media

Data quality indicator	Frequency	Data quality acceptance criteria
Precision		
Blind and split duplicates	1 / 10 samples (combined)	<30-200% RPD
Transport blank	1 per batch	<LOR
Transport spike	-	-
Accuracy		
Surrogate spikes (laboratory)	All organic samples	70-130%
Laboratory control samples	1 per lab batch	<LOR
Matrix spikes	1 per lab batch	70-130%
Rinsate blanks	1/equipment/day	<LOR
Representativeness		
Sampling appropriate for media and analytes	All samples	-
Samples extracted and analysed within holding times	All samples	-
LORs appropriate and consistent ¹	All samples	All samples
Comparability		
Consistent field conditions, sampling staff and laboratory analysis	All samples	All samples
Standard operating procedures for sample collection & handling	All samples	All samples
Standard analytical methods used for all analyses	All samples	All samples
Completeness		
Sample description and COCs completed and appropriate	All Samples	All Samples
Appropriate documentation	All Samples	All Samples
Satisfactory frequency and result for QA/QC samples	All QA/QC samples	-
Data from critical samples is considered valid	-	Critical samples valid
Acronyms COC: Chain of Custody LOR: Limit of Reporting QA/QC: Quality assurance / quality control		
Table notes: 1. The 95% species protection level has been applied for slightly to moderately disturbed ecosystems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. It is proposed that the laboratory LOR is adopted for the purposes of preliminary screening of analytical water results, rather than sole use of the criteria value.		

If any of the DQIs are not met, further investigation will be necessary to determine whether the non-conformance will significantly affect the usefulness of the data.

D-1-1 Field quality assurance and quality control

The quality assurance/quality control (QA/QC) procedures are based on NEPM Schedule B2 (NEPC, 2013).

QA involves all the actions, procedures, checks and decisions, undertaken to ensure the representativeness and integrity of samples and accuracy and reliability of analytical results (NEPC, 2013). QC involves protocols to monitor and measure the effectiveness of QA procedures.

All fieldwork was conducted with reference to Australian Standards and GHD's Standard Field Operating Procedures which ensure all samples are collected by a set of uniform and systematic methods, as required by GHD's QA system. Key requirements of these procedures are listed below:

- Decontamination procedures – including washing and rinsing of re-useable equipment, the use of new disposable gloves and the use of sampling containers provided by the laboratory.
- Sample identification procedures - samples were immediately transferred to sample containers of appropriate composition and preservation for the required laboratory analysis. All sample containers were clearly labelled with a sample number, job number, and sample date. The sample containers were then transferred to a chilled insulated container for sample preservation prior to and during shipment to the analytical laboratory.
- Chain of custody information requirements - a chain of custody form was completed and forwarded to the testing laboratory with the samples.
- Blind/split duplicate and blank sample frequency – refer to assessment below.
- Calibration of measuring equipment was carried out prior to the sampling event, the calibration certificate and field check prior to use is provided in Appendix F.

D-1-2 Sampling analysis and quality control

The QC samples collected during the investigation are described below.

- Blind duplicate/Intra laboratory duplicate: Blind replicates are used to identify the variation in the analyte concentration between samples from the same sampling point and the repeatability of the laboratory's analysis.
- Split duplicate/Inter laboratory duplicate: Split samples provide an indication of the repeatability of the results between laboratories.
- Trip blanks: Trip blank samples are used to estimate the amount of contamination introduced during the transport and storage of samples from the time of sampling to the time of analysis. Trip blanks were analysed for BTEX. Trip blank analytical results are presented in Table D4.
- Trip spikes: Trip spike samples are used to estimate the potential for volatile contamination to be lost during storage and transportation of samples. Trip spike analytical results are presented in Table D5.
- Rinsate: Rinsate samples are used to assess the quality of decontamination of sampling equipment between locations. Rinsate samples were analysed for PAH and metals. Trip blank analytical results are presented in Table D4.

D-1-3 Field QA/QC samples

Duplicate pairs are presented in Table D2 below. Relative percentage difference (RPD) calculations are used to assess how closely primary and inter/intra duplicate sample results match. RPDs are a quantitative measure of the accuracy of the analytical results and are calculated in accordance with the procedure described in *AS 4482.1 – 2005*.

GHD has adopted the RPD range as summarised in Section D-1. However, it is noted that this will not always be achieved, particularly at low analyte concentrations. Where a result is below the laboratory limit of reporting (LOR) for one of the paired samples, the concentration assigned to that sample is the LOR. Where both results are reported below laboratory LOR the RPD is not calculated.

The RPD was calculated for each duplicate pair and presented in Table D3 following this assessment. No RPDs were reported.

D-2 Laboratory quality assurance / quality control

Laboratory methods used by the primary laboratory were suitable for environmental contaminant analysis and are based on established internationally recognised procedures such as those published by the United States Environmental Protection Agency (US EPA), American Public Health Association (APHA), AS and National Environment Protection (Assessment of Site Contamination) Measure (NEPM).

The individual testing laboratory conducted an assessment of the laboratory QC program however the results were also independently reviewed and assessed internally by GHD. Recovery targets below are defined in the Eurofins/ALS QA/QC section of the certificates of analysis reports. All laboratory QA/QC results are documented with the laboratory certificates of analysis provided in Appendix G.

D-2-1 Laboratory quality control procedures

Laboratory QC samples incorporated in the analytical process include:

Laboratory blind duplicate samples

A laboratory blind duplicate provides data on the analytical precision and reproducibility of the analytical result. The laboratory blind duplicate is created by sub sampling from one of the primary samples submitted for analysis. Laboratory blind duplicates are analysed at a rate equivalent to one in twenty samples per analytical batch, or one sample per batch if less than twenty samples are analysed in a batch.

The permitted ranges for the RPD of laboratory blind duplicates are dependent on the magnitude of the results in comparison to the level of reporting as shown in Table D2.

Table D2 Permitted laboratory blind duplicate relative percentage differences (RPD) ranges

Magnitude of result	Permitted RPD range
< 10 x limit of reporting (LOR)	No limits
10 – 20 x LOR	0% - 50%
> 20 x LOR	0% - 30%

Matrix spike recoveries

Matrix spike sample analysis is the analysis of one or more replicate portions of samples from the batch, after fortifying the additional portion(s) with known quantities of the analyte(s) of interest. The percentage recovery of target analyte(s) from matrix spike samples is used to determine the bias of the method in the specific sample matrix. Recoveries must lie between 70% and 130%.

Laboratory control sample

The laboratory control sample (LCS) analysis of either a reference material or a control matrix fortified with analytes representative of the analyte class. The purpose of LCS is to monitor method precision and accuracy independent of the sample matrix. Typically, the percentage recovery of the LCS is compared to the dynamic recovery limit based on the statistical analysis of the processed LCS analysis. The Eurofins acceptance criteria, indicates recoveries must lie between 70% and 130%.

Surrogate spike recoveries

Surrogate Spikes provide a means of checking that no gross errors have occurred during any stage of the analytical method leading to significant analyte loss. Surrogate recoveries are similar to the analyte of interest in terms of chemical composition, extractability, and chromatographic conditions (retention time), but which are not normally found in environmental samples. Surrogate compounds are spiked into blanks, standards and samples submitted for organic analyses by gas-chromatographic techniques prior to sample extraction. Recommended recoveries vary between analytes.

Method blank samples

Method or analysis blank sample analysis is the analysis of a sample that is as free as possible of the analytes of interest, but has been prepared in the same manner as the samples under investigation. The analysis is to ascertain if laboratory reagent, glassware and other laboratory consumables contribute to the

observed concentration of analytes in the process batch. If below the maximum acceptable method blank (20% of the practical quantification limit), the contribution is subtracted from the gross analytical signal for each analysis before calculating the sample analyte concentration. The method blank should return analyte concentrations as 'not detected'.

The individual testing laboratory conducted an assessment of the laboratory QC program internally. However, the results were also independently reviewed and assessed by GHD.

D-3 QC Assessment

Laboratory report type	Report number
Primary laboratory and report numbers:	Eurofins: 1222552, 1226889
Secondary laboratory and report numbers:	ALS: ES2515149

1. Field QA/QC sample collection	Media		Comments and DQI assessment
	Soil	Water	
Number of Primary Samples analysed	6	3	-
Number of Days Sampling	1	1	-
Intra-Laboratory Field Duplicates (1/10 samples)	1	1	Meets requirements
Inter-Laboratory Field Duplicates (1/10 samples)	1	1	Meets requirements
Trip Blanks (1/ batch)	1	0	No trip blank/spike for water was collected as groundwater was included as a late addition to the program. For the purposes of this investigation, the soil blank/spike is considered appropriate as samples were collected on the same day and handled under the same conditions.
Trip Spikes (1/ batch)	1	0	
Rinsate Blanks (1/equipment/day)	1	1	Meets requirements
2. Sample Handling	Water and Soil		Comments and DQI assessment
Were the sample holding times met?	Yes		-
Were the samples in proper custody between the field and reaching this laboratory?	Yes		-
Were the samples properly and adequately preserved?	Yes		-
Did the laboratory receive the samples in good condition	Yes		-
3. Precision/Accuracy Assessment	Water and Soil		Comments and DQI assessment
Was a NATA registered laboratory used?	Yes		-
Did the laboratory perform the requested tests?	Yes		-
Were the laboratory methods adopted NATA endorsed?	Yes		-

Were the reporting limits satisfactory?	Yes	-
Was the NATA Seal on the reports?	Yes	-
Did an authorised person sign the reports?	Yes	-
4. Field Duplicates assessment	Water and Soil	Comments and DQI assessment
Were an adequate number of intra and inter-laboratory field duplicates analysed?	Yes	
Were RPDs within Control limits?	Yes	See Table D3
5. Trip Blanks/Rinsates	Water and Soil	Comments and DQI assessment
Were an adequate number of trip blanks analysed?	Yes	Refer section 1 of this table
Were an adequate number of rinsate blanks analysed?	Yes	
Were the trip blanks free of contamination?	Yes	Refer Table D4
Were the rinsate blanks free of contaminants? (If no, were contaminants present also detected in the samples/ are they common laboratory chemicals.)	Yes	Refer Table D4
6. Trip Spikes	Water and Soil	Comments and DQI assessment
Were an adequate number of Trip Spikes analysed?	Yes	
Were the Trip Spike results within control limits?	Yes	Refer Table D5
7. Laboratory Internal Quality Control Procedures – Pass/fail	Water and Soil	Comments and DQI assessment
Method Blanks	Pass	
Matrix Spikes	Pass	
Laboratory Control Samples/Spikes	Pass	
Laboratory Duplicates	Pass	
Surrogates	Pass	
Frequency of Quality Control Samples	Pass	

D-3-1 QC Summary

QC parameters	Satisfactory	Partially Satisfactory	Unsatisfactory	Comments and DQI assessment
Field QA/QC sample collection	X			-
Sample Handling	X			-
Precision/ Accuracy assessment	X			-

QC parameters	Satisfactory	Partially Satisfactory	Unsatisfactory	Comments and DQI assessment
Field QA/QC assessment	X			-
Laboratory Internal QA/QC	X			-

Data Usability		Comments
Data Directly Usable		
Data Usable with the following qualifications	X	On balance of the above, assessment data is considered adequate for the purpose of the investigation.
Data Not Usable		

QA/QC Report Prepared by: Andrew Duval

QA/QC Report Checked by: Helen Milne



Appendix D
Table D3
Soil and Water RPDs

Health Infrastructure
Caves Beach
NSW Ambulance Infrastructure Program

	Unit	EQL	Location Code	CB-BH03	CB-BH03	RPD	CB-BH03	CB-BH03	RPD
			Date	19 May 2025	19 May 2025		19 May 2025	19 May 2025	
			Field ID	CB-BH03_2.5-2.95	QC403		CB-BH03_2.5-2.95	QC404	
			Sample Type	Normal	Field_D		Normal	Interlab_D	
			Lab Report Number	1222552	1222552		1222552	ES2515149	
			Matrix Type	Soil	Soil		Soil	Soil	
Metals									
Arsenic	mg/kg	2	2.7	2.7	0	2.7	<5	0	
Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<1	0	
Chromium (III+VI)	mg/kg	2	5.4	5.4	0	5.4	5	8	
Copper	mg/kg	5	<5	<5	0	<5	<5	0	
Lead	mg/kg	5	<5	<5	0	<5	<5	0	
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	
Nickel	mg/kg	2	<5	<5	0	<5	2	0	
Zinc	mg/kg	5	<5	<5	0	<5	<5	0	
BTEXN									
Naphthalene (value used in F2 calc)	mg/kg	0.5	<0.5	-	-	<0.5	-	-	
Benzene	mg/kg	0.1	<0.1	-	-	<0.1	-	-	
Toluene	mg/kg	0.1	<0.1	-	-	<0.1	-	-	
Ethylbenzene	mg/kg	0.1	<0.1	-	-	<0.1	-	-	
Xylene (o)	mg/kg	0.1	<0.1	-	-	<0.1	-	-	
Xylene (m & p)	mg/kg	0.2	<0.2	-	-	<0.2	-	-	
Xylene Total	mg/kg	0.3	<0.3	-	-	<0.3	-	-	
TRH - NEPM 2013									
F1 (C6-C10 minus BTEX)	mg/kg	20	<20	-	-	<20	-	-	
C6-C10 Fraction	mg/kg	20	<20	-	-	<20	-	-	
F2 (>C10-C16 minus Naphthalene)	mg/kg	50	<50	-	-	<50	-	-	
>C10-C16 Fraction	mg/kg	50	<50	-	-	<50	-	-	
F3 (>C16-C34 Fraction)	mg/kg	100	<100	-	-	<100	-	-	
F4 (>C34-C40 Fraction)	mg/kg	100	<100	-	-	<100	-	-	
>C10-C40 (Sum of Total)	mg/kg	100	<100	-	-	<100	-	-	
TRH - NEPM 1999									
C6-C9 Fraction	mg/kg	20	<20	-	-	<20	-	-	
C10-C14 Fraction	mg/kg	20	<20	-	-	<20	-	-	
C15-C28 Fraction	mg/kg	50	<50	-	-	<50	-	-	
C29-C36 Fraction	mg/kg	50	<50	-	-	<50	-	-	
C10-C36 (Sum of Total)	mg/kg	50	<50	-	-	<50	-	-	
PAHs - standard 16									
Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Benzo[b+j]fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	
Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Organic analytes 50%, Inorganic analytes 30%)

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



Appendix D
Table D3
Soil and Water RPDs

Health Infrastructure
Caves Beach
NSW Ambulance Infrastructure Program

Location Code Date Field ID Sample Type Lab Report Number Matrix Type			MW1	MW1	RPD	MW6	MW6	RPD
			19 May 2025	19 May 2025		19 May 2025	19 May 2025	
			MW1	QC402		MW6	QC401	
			Normal	Interlab_D		Normal	Field_D	
			1222552	ES2515149		1222552	1222552	
			Water	Water		Water	Water	
	Unit	EQL						
Metals								
Arsenic (filtered)	mg/L	0.001	0.17	0.179	5	0.007	0.007	0
Cadmium (filtered)	mg/L	0.0001	<0.0002	<0.0001	0	<0.0002	<0.0002	0
Chromium (III+VI) (filtered)	mg/L	0.001	<0.001	<0.001	0	0.002	0.002	0
Copper (filtered)	mg/L	0.001	<0.001	<0.001	0	<0.001	0.001	0
Lead (filtered)	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Mercury (filtered)	mg/L	0.0001	<0.0001	<0.0001	0	<0.0001	<0.0001	0
Nickel (filtered)	mg/L	0.001	<0.001	<0.001	0	<0.001	<0.001	0
Zinc (filtered)	mg/L	0.005	0.009	0.009	0	0.014	0.016	13
BTEXN								
Naphthalene (value used in F2 calc)	µg/L	5	<10	<5	0	<10	<10	0
Benzene	µg/L	1	<1	<1	0	<1	<1	0
Toluene	µg/L	1	<1	<2	0	<1	<1	0
Ethylbenzene	µg/L	1	<1	<2	0	<1	<1	0
Xylene (o)	µg/L	1	<1	<2	0	<1	<1	0
Xylene (m & p)	µg/L	2	<2	<2	0	<2	<2	0
Xylene Total	µg/L	2	<3	<2	0	<3	<3	0
TRH - NEPM 2013								
F1 (C6-C10 minus BTEX)	µg/L	20	<20	<20	0	<20	<20	0
C6-C10 Fraction	µg/L	20	<20	<20	0	<20	<20	0
F2 (>C10-C16 minus Naphthalene)	µg/L	50	<50	<100	0	<50	<50	0
>C10-C16 Fraction	µg/L	50	<50	<100	0	<50	<50	0
F3 (>C16-C34 Fraction)	µg/L	100	<100	<100	0	<100	<100	0
F4 (>C34-C40 Fraction)	µg/L	100	<100	<100	0	<100	<100	0
>C10-C40 (Sum of Total)	µg/L	100	<100	<100	0	<100	<100	0
TRH - NEPM 1999								
C6-C9 Fraction	µg/L	20	<20	<20	0	<20	<20	0
C10-C14 Fraction	µg/L	50	<50	<50	0	<50	<50	0
C15-C28 Fraction	µg/L	100	<100	<100	0	<100	<100	0
C29-C36 Fraction	µg/L	50	<100	<50	0	<100	<100	0
C10-C36 (Sum of Total)	µg/L	50	<100	<50	0	<100	<100	0
PAHs - standard 16								
Acenaphthene	µg/L	1	<1	<1.0	0	<1	<1	0
Acenaphthylene	µg/L	1	<1	<1.0	0	<1	<1	0
Anthracene	µg/L	1	<1	<1.0	0	<1	<1	0
Benz(a)anthracene	µg/L	1	<1	<1.0	0	<1	<1	0
Benzo(a)pyrene	µg/L	0.5	<1	<0.5	0	<1	<1	0
Benzo[b+j]fluoranthene	µg/L	1	<1	<1.0	0	<1	<1	0
Benzo(k)fluoranthene	µg/L	1	<1	<1.0	0	<1	<1	0
Benzo(g,h,i)perylene	µg/L	1	<1	<1.0	0	<1	<1	0
Chrysene	µg/L	1	<1	<1.0	0	<1	<1	0
Dibenz(a,h)anthracene	µg/L	1	<1	<1.0	0	<1	<1	0
Fluoranthene	µg/L	1	<1	<1.0	0	<1	<1	0
Fluorene	µg/L	1	<1	<1.0	0	<1	<1	0
Indeno(1,2,3-c,d)pyrene	µg/L	1	<1	<1.0	0	<1	<1	0
Naphthalene	µg/L	1	<1	<1.0	0	<1	<1	0
Phenanthrene	µg/L	1	<1	<1.0	0	<1	<1	0
Pyrene	µg/L	1	<1	<1.0	0	<1	<1	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Organic analytes 50%, Inorganic analytes 30%)

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



Appendix D
Table D4
Trip Blank and Rinsate Blank Results

Health Infrastructure
Caves Beach
NSW Ambulance Infrastructure Program

Rinsate Blanks

			Field ID	RB401	RB402
			Date	19 May 2025	19 May 2025
			Sample Type	Rinsate	Rinsate
			Matrix Type	Water	Water
	Unit	EQL			
Metals					
Arsenic	mg/L	0.001		<0.001	<0.001
Cadmium	mg/L	0.0002		<0.0002	<0.0002
Chromium (III+VI)	mg/L	0.001		<0.001	<0.001
Copper	mg/L	0.001		<0.001	<0.001
Lead	mg/L	0.001		<0.001	<0.001
Mercury	mg/L	0.0001		<0.0001	<0.0001
Nickel	mg/L	0.001		<0.001	<0.001
Zinc	mg/L	0.005		<0.005	<0.005
PAHs - standard 16					
Acenaphthene	µg/L	1		<1	<1
Acenaphthylene	µg/L	1		<1	<1
Anthracene	µg/L	1		<1	<1
Benz(a)anthracene	µg/L	1		<1	<1
Benzo(a)pyrene	µg/L	1		<1	<1
Benzo[b+j]fluoranthene	µg/L	1		<1	<1
Benzo(k)fluoranthene	µg/L	1		<1	<1
Benzo(g,h,i)perylene	µg/L	1		<1	<1
Chrysene	µg/L	1		<1	<1
Dibenz(a,h)anthracene	µg/L	1		<1	<1
Fluoranthene	µg/L	1		<1	<1
Fluorene	µg/L	1		<1	<1
Indeno(1,2,3-c,d)pyrene	µg/L	1		<1	<1
Naphthalene	µg/L	1		<1	<1
Phenanthrene	µg/L	1		<1	<1
Pyrene	µg/L	1		<1	<1
PAHs (Sum of total) - Lab calc	µg/L	1		<1	<1

Trip Blanks

			Field ID	TB401_250519
			Date	12 May 2025
			Sample Type	Trip_B
			Matrix Type	Soil
	Unit	EQL		
BTEXN				
Naphthalene (value used in F2 calc)	mg/kg	0.5		<0.5
Benzene	mg/kg	0.1		<0.1
Toluene	mg/kg	0.1		<0.1
Ethylbenzene	mg/kg	0.1		<0.1
Xylene (o)	mg/kg	0.1		<0.1
Xylene (m & p)	mg/kg	0.2		<0.2
Xylene Total	mg/kg	0.3		<0.3
TRH - NEPM 2013				
F1 (C6-C10 minus BTEX)	mg/kg	20		<20
C6-C10 Fraction	mg/kg	20		<20
TRH - NEPM 1999				
C6-C9 Fraction	mg/kg	20		<20



Appendix D
Table D5
Trip Spike Recoveries

Health Infrastructure
Caves Beach
NSW Ambulance Infrastructure Program

Trip Spikes

Field ID	Matrix Type	Sample Type	Sampled Date	Chem Name	Spike Recovery %
TS401_250519	Soil	Trip_S	12/05/2025	Benzene	90
TS401_250519	Soil	Trip_S	12/05/2025	Toluene	90
TS401_250519	Soil	Trip_S	12/05/2025	Ethylbenzene	88
TS401_250519	Soil	Trip_S	12/05/2025	Xylene (m & p)	87
TS401_250519	Soil	Trip_S	12/05/2025	Xylene (o)	87
TS401_250519	Soil	Trip_S	12/05/2025	Xylene Total	87
TS401_250519	Soil	Trip_S	12/05/2025	Naphthalene	75
TS401_250519	Soil	Trip_S	12/05/2025	C6-C10 Fraction	88
TS401_250519	Soil	Trip_S	12/05/2025	C6-C9 Fraction	89

Trip Spike Recoveries. Limits between 70% and 130% have been adopted for non-compliance.

Appendix E

Field sheets



Site Inspection Record

Client:	NSW Ambulance Infrastructure	Date:	19/05/2025
Job No. / Name:	12657833	Arrival Time:	7:30 AM
Location	2-4 Kayuga Close, Caves Beach	Departure Time:	3:30 PM
GHD Representative:	AD	Weather Conditions:	Heavy rain
Works Being Undertaken:	Drilling 3 boreholes for Geotechnical and Contamination Investigations		
No.	Item	Comment	
1	What is the site locality?	General Industrial E4	
2	Are dimensions of site known?	~3900m3	
3	Describe topography and slope.	Generally flat, falls towards Kayuga Place in west of site, eastern portion of site falls towards the east.	
4	Describe site surface condition:	Hardstand Apron around buildings, good condition at front of site, Poor condition and heavy cracks in hardstand at the back of the site; healthy grass at front and back end of site.	
5	Is any visible staining present?	No	
6	Is site built on?	Yes	
7	Describe paving, floor or site surface type(s) and conditions	Hardstand Apron around buildings, good condition at front of site, Poor condition and heavy cracks in hardstand at the back of the site; healthy grass at front and back end of site	
8	Is there presence of surface water on or near site?	No, however ponded water at back of site after heavy rain	
9	Name the closest water course and provide distance to.	Black Neds Bay, ~300m north-east	
10	Is there presence of vegetation?	3 small trees and grass at front of site, grass at rear of site, dead branches stored along back fence	
11	Is there evidence of any odour?	No	
12	Is there any litter?	Some dead branches, some wooden planks, some plastic litter, discarded metal sheeting, wooden pallets	
13	Is there any waste drums, cans, etc?	No	
14	Is there any evidence of above ground or below ground bulk storage systems on site?	No. Evidence of underground sewer system on site covered by concrete slab.	
15	Are vents or fuel delivery systems present (bowzers etc)?	No	
16	Is there any evidence of saw cuts in concrete, unusual drainage systems or oil/water separators?	No	
17	Is there any evidence of furnaces/burning, scorched soils?	No	
18	Is there any evidence of filling on site?	Fill for development and construction of site buildings	
19	Is there evidence of Asbestos in building (cement sheet or fibrous insulation) or soil?	Previous HAZMAT assessment indicated asbestos containing materials in building materials on site. Buildings on site appeared intact and in good condition.	
20	Is there any evidence of PCB containing electrical equipment? (transformer, old fluorescent lights etc.)	No	
21	Describe previous land use:	Ausgrid storage facility	
22	Surrounding land use	Industrial, including automotive and smash repairs	
23	Is the site fenced? If No, is the site secure from illegal dumping?	Yes	
24	Further comments or Anecdotal evidence:	Nil	

Purging and Sampling Record

Well ID: MW1

Job Information		Sampling Information		Monitoring Well Information			
Client: Health Infrastructure NSW	Purge Method:	Low flow	SWL:	1.438 m bTOC	Time SWL Measured:	09:50 AM	
Project: NSW Ambulance Infrastructure	Sample Method:	Peri pump	Well Depth:	2.976 m bTOC	Logic Check:	Yes	
Proj. No.: 12657833	Sample Depth:	2.7 m bTOC	NAPL Check:	Absent	Well Cap Secure?	Yes	
Site: Caves Beach	WQuality Meter Type:	YSI	NAPL Depth:	m bTOC	Gatic or Stick Up?	Gatic	
Sampler: AD	Flow Cell Used?	Yes	Screened Interval From:	1.5 to 3 m bgl			
Date: 19/05/2025	WLevel Meter Type:	Interface Probe	Well Diameter:	50 mm	Stick Up:	0.024 m	
Round: May DSI	Field Filtered?	Yes					

[illegible]

Field QA Checks: Air bubbles in vials or violent reactions? No Decontamination as per GHD procedure? Yes Was sampling equipment pre-cleaned? Yes COC updated? Yes		Purge Volumes Casing Int. Dia (mm) 50 100 150 Vol (L/m of casing) 2.0 7.9 17.7			
--	--	---	--	--	--

Comment:	Inter-laboratory duplicate; water within gatic, removed before purging; heavy rain runoff from surrounding hardstand into well during purging					
Sample Summary	Samples collected?	Yes	Duplicate collected?	Yes	Duplicate 1 ID:	QC402
	#Primary sample containers	4	Duplicate analysis:	8 metals, PAH, TRH, BTEX	Duplicate 2 ID:	

Purging and Sampling Record

Well ID: MW4

Job Information		Sampling Information		Monitoring Well Information			
Client: Health Infrastructure NSW	Purge Method:	Low flow	SWL:	1.678	m bTOC	Time SWL Measured:	12:31 PM
Project: NSW Ambulance Infrastructure	Sample Method:	Peri pump	Well Depth:	3.468	m bTOC	Logic Check:	Yes
Proj. No.: 12657833	Sample Depth:	3.2 m bTOC	NAPL Check:	Absent		Well Cap Secure?	Yes
Site: Caves Beach	WQuality Meter Type:	YSI	NAPL Depth:	m bTOC		Gatic or Stick Up?	Gatic
Sampler: AD	Flow Cell Used?	Yes	Screened Interval From:	2.1	to 3.7 m bgl		
Date: 19/05/2025	WLevel Meter Type:	Interface Probe	Well Diameter:	50	mm	Stick Up:	0.047 m
Round: May DSI	Field Filtered?	Yes					

[illegible]

Field QA Checks: Air bubbles in vials or violent reactions? Decontamination as per GHD procedure? Was sampling equipment pre-cleaned? COC updated?		Purge Volumes Casing Int. Dia (mm) 50 100 150 Vol (L/m of casing) 2.0 7.9 17.7		
---	--	---	--	--

Comment:	Water within gatic, non-brittle sheen present, removed before sampling			
Sample Summary	Samples collected?	Yes	Duplicate collected?	Duplicate 1 ID:
	#Primary sample containers	4	Duplicate analysis:	Duplicate 2 ID:

Purging and Sampling Record

Well ID: MW6

Job Information		Sampling Information		Monitoring Well Information			
Client: Health Infrastructure NSW	Purge Method:	Low flow	SWL:	2.031 m bTOC	Time SWL Measured:	11:11 AM	
Project: NSW Ambulance Infrastructure	Sample Method:	Peri pump	Well Depth:	3.540 m bTOC	Logic Check:	Yes	
Proj. No.: 12657833	Sample Depth:	3.3 m bTOC	NAPL Check:	Absent	Well Cap Secure?	Yes	
Site: Caves Beach	WQuality Meter Type:	YSI	NAPL Depth:	m bTOC	Gatic or Stick Up?	Gatic	
Sampler: AD	Flow Cell Used?	Yes	Screened Interval From:	0.7 to 3.7 m bgl			
Date: 19/05/2025	WLevel Meter Type:	Interface Probe	Well Diameter:	50 mm	Stick Up:	0.03 m	
Round: May DSI	Field Filtered?	Yes					

[illegible]

Field QA Checks: Air bubbles in vials or violent reactions? Decontamination as per GHD procedure? Was sampling equipment pre-cleaned? COC updated?		Purge Volumes Casing Int. Dia (mm) 50 100 150 Vol (L/m of casing) 2.0 7.9 17.7			
---	--	---	--	--	--

Comment:	Intra-laboratory duplicate; water within gatic, removed before purging				
Sample Summary	Samples collected?	Yes	Duplicate collected?	Yes	Duplicate 1 ID: QC401
	#Primary sample containers	4	Duplicate analysis:	8 metals, PAH, TRH, BTEX	Duplicate 2 ID:

Appendix F

Photolog

Appendix F – Photolog



Photo 1 Existing building at front of site, facing east



Photo 2 Existing site sheds, facing west



Photo 3 Back of site behind sheds, facing south



Photo 4 Suspected sewer pit at rear of site, facing north



Photo 5 ***Metal sheeting at rear of site***



Photo 6 ***Wooden board at rear of site***



Photo 7 ***Pavement condition at front of site***



Photo 8 ***Pavement condition at rear of site***



Photo 9 ***Pooled water at rear of site***



Photo 10 ***Branches at rear of site***

Appendix G

Calibration records



airmet

Air-Met Scientific Pty Ltd
1800 000 744

Instrument YSI ProDSS
Serial No. 21K101477

Item	Test	Pass	Comments
Battery	Charge Condition	✓	
	Fuses	✓	
	Capacity	✓	
Switch/keypad Display	Operation	✓	
	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		0ppm		432901	0ppm
2. Conductivity		2760 μ S		433489	2760 μ S
3. pH7		pH 7		433551	pH 7
4. pH4		pH 4		429462	pH 4
5. Temp °C		20°C		MultTherm	20°C
6. ORP mV		234mV		439985/435258	234mV
7. Turbidity		0 NTU		Distilled Water	0 NTU
8. Turbidity		100 NTU		440963	100 NTU

Calibrated by: Chris Nicdao

Calibration date: 15-May-25

Next calibration due: 11-Nov-25

PID Calibration Certificate

Instrument Tiger XT
Serial No. XT-100664



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	100ppm	250ppm
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	NIST	SY622		96.5 ppm

Calibrated by: _____ Alex Buist

Calibration date: 15/05/2025

Next calibration due: 14/06/2025

Oil / Water Interface Meter

Instrument Geotech Interface Meter (60M)
 Serial No. 5810



airmet
 Air-Met Scientific Pty Ltd
 1300 137 067

Item	Test	Pass	Comments
Battery	Compartment	✓	
	Capacity	✓	
Probe	Cleaned/Decon.	✓	
	Operation	✓	
Connectors	Condition	✓	
		✓	
Tape Check Connectors	Cleaned	✓	
	Checked for cuts	✓	
Instrument Test	At surface level	✓	

Certificate of Calibration

This is to certify that the above instrument has been cleaned and tested.

Calibrated by: _____ **Nausheen Mazari**

Calibration date: 13/05/2025

Next calibration due: 12/07/2025

Appendix H

Laboratory certificates



Sydney
179 Magowar Road, Girraween, NSW 2145
Phone: +61 2 9900 8400
Email: EnviroSampleNSW@eurofins.com

Melbourne
6 Monterey Road, Dandenong South, VIC 3175
Phone: +61 3 8564 5000
Email: EnviroSampleVIC@eurofins.com

Brisbane
1/21 Smallwood Place, Murarie, QLD 4172
Phone: +61 7 3902 4600
Email: EnviroSampleQLD@eurofins.com

CHAIN OF CUSTODY RECORD

Page ____ of ____

CLIENT DETAILS

Company Name : GHD Pty Ltd, Sydney

Office Address :

Level 15, 133 Castlereagh Street, Sydney NSW 2000

Contact Name : Andrew Duval

Project Manager : Carmen Yi

Email for results : andrew.duval@ghd.com, carmen.yi@ghd.com,
emily.smith@ghd.com, ghdlabreports@ghd.com

Purchase Order :

PROJECT Number : 12657833

PROJECT Name : NSW Ambulance Infrastructure - Caves Beach

COC Number :

Eurofins | mgt quote ID : GHD Rates 2024

Data output format: ESDAT

Some common holding times (with correct preservation).
For further information contact the lab

Waters

BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous Iron	7 days	ASLP, TCLP	7 days

Soils

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Sample ID	Date	Matrix	HOLD	B7 (TRH, BTEXN, PAH, Metals 6)	B10B (TRH, BTEXN, PAH, OCP, OPP, PCB, Metals 6)	Asbestos ID	BTEX/TRH	BTEX	PAH	8 Metals	Forward to ALS	Containers:	Sample comments:
CB-BH01 0.5-0.95	19/05/2025	Soil		X		X							PID = 0.0
CB-BH01 1.0-1.45	19/05/2025	Soil				X							PID = 0.1
CB-BH01 1.5-1.7	19/05/2025	Soil		X									PID = 0.1
CB-BH01 3.0-3.2	19/05/2025	Soil	X		X	X							PID = 0.1
CB-BH02 0.5-0.95	19/05/2025	Soil			X	X							PID = 0.1
CB-BH02 1.0-1.45	19/05/2025	Soil				X							PID = 0.3
CB-BH02 0.9-1.0	19/05/2025	Soil											PID = 0.7
CB-BH02 2.5-2.95	19/05/2025	Soil	X	X									PID = 0.4
CB-BH02 7.9-8.0	19/05/2025	Soil	X										PID = 0.4
CB-BH03 0.5-0.95	19/05/2025	Soil		X		X							PID = 0.5
CB-BH03 2.5-2.95	19/05/2025	Soil	X			X	X						PID = 0.2
CB-BH03A 0.05-0.10	19/05/2025	Soil			X	X							
QC401	19/05/2025	Water		X							X		Forward to ALS
QC402	19/05/2025	Water							X	X			Forward to ALS
QC403	19/05/2025	Soil									X		
QC404	19/05/2025	Soil					X						
TB401 250519	12/05/2025	Soil						X					
TS401 250519	12/05/2025	Soil							X	X			
RB401	19/05/2025	Water							X	X			
RB402	19/05/2025	Water											
MW1	19/05/2025	Water			X								Bottle label: BH01
MW4	19/05/2025	Water			X								Bottle label: BH04
MW6	19/05/2025	Water			X								Bottle label: BH06

Relinquished By: Andrew Duval - GHD

Date & Time : 20/05/2025 09:00 AM

Signature: On file

Received By:

Date & Time :

Signature:

Kayla Mohammad
20/5/25 5:27pm
O-10 chill K.M

Turn around time

1 DAY 2 DAY 3 DAY
5 DAY 10 DAY

Method Of Shipment

Courier: ATC DB11119

Hand Delivered

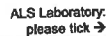
Postal

Courier Consignment # :

Temperature on arrival:

Report number:

1722552



DADELAIDE 21 Burma Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callamondah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

Q MACKAY 7th Harbour Road Mackay QLD 4740
 Ph: 07 4944 0177 E: mackay@alsglobal.com
 Q MELBOURNE 2-4 Westall Road Springvale VIC 3171
 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
 Q MUDGEE 27 Sydney Road Mudgee NSW 2850
 Ph: 02 4922 6735 E: mudgee.mail@alsglobal.com

QNEWCASTLE 5 Rose Gum Road Warabrook NSW 2304
Ph: 02 4958 9433 E: samples.newcastle@alsglobal.com

QNOWRA 4/13 Geary Place North Nowra NSW 2541
Ph: 024423 2063 E: nowra@alsglobal.com

QPERTH 10 Hod Way Malaga WA 6090
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

QSYDNEY 277-289 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
QTOWNSVILLE 14-15 Desma Court Bohle QLD 4818
Ph: 07 4796 0600 E: townesville.environmental@alsglobal.com
QWOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: portkembla@alsglobal.com

Email Invoice to (will default to PM if no other addresses are listed):

TURNAROUND REQUIREMENT. ☐ Standard TAT (List due date):

(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)

ALS QUOTE NO.: **GHD Rates**

CONTACT PH:

SAMPLER MOBILE: 0468 301 344

EDD FORMAT (or default):

RELINQUISHED BY:

Andrew Duval

DATE/TIME:

20/05/2025 09:00 AM

COC SEQUENCE NUMBER (Circle)

COC: 1 2 3 4 5 6 7

OF: 1 2 3 4 5 6 7

RECEIVED BY: Kayla McNamee

Eurofins

DATE/TIME: 2015/25

 $\delta = 27 \text{ ppm} \quad 0.1^\circ$

FOR LABORATORY USE ONLY (Circle)

	Yes	No	N/A
Custody Seal Intact?			

Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
--	-----	----	-----

Random Sample Temperature on Receipt: _____ °C

Other comment:

RELINQUISHED BY:

RECEIVED BY:

DATE/TIME:

DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ANALYSIS REQUIRED including **SUITES** (NB. Suite Codes must be listed to attract suite price)
Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).

[illegible]

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

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

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

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

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

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

Sample Receipt Advice

Company name: GHD Pty Ltd NSW
Contact name: Carmen Yi
Project name: NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH
Project ID: 12657833
Turnaround time: 5 Day
Date/Time received: May 20, 2025 5:27 PM
Eurofins reference: 1222552

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : .1 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✓ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Second metals bottle for sample QC401 assumed to belong to sample MW6 as per email discussion. Samples QC402 and QC404 to be sent to ALS

Contact

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

Adam Bateup on phone : or by email: Adam.Bateup@eurofinsanz.com

Results will be delivered electronically via email to Carmen Yi - carmen.yi@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: Carmen Yi
Report 1222552-AID-V2
Project Name **NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH**
Project ID **12657833**
Received Date May 20, 2025
Date Reported Jun 02, 2025

Methodology:

Asbestos Fibre
 Identification

Conducted in accordance with the Australian Standard AS 5370:2024* Sampling and qualitative identification of asbestos in bulk materials (ISO 22262-1:2012, MOD), formerly AS 4964-2004 and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.

Man-made vitreous
 fibre (MMVF)

Fibres exhibiting isotropic characteristics, including glass fibres, glass wool, rock wool, slag wool, ceramic fibres and bio-soluble fibres. NOTE: previously known as "synthetic mineral fibre" (SMF). Simple analytical procedures such as polarised light microscopy cannot detect or reliably identify asbestos in some types of commercial products containing asbestos, either because the fibres are below the resolution of optical microscopy or because the matrix material adheres too strongly to the fibres. For these types of products, electron microscopy may be necessary.

Subsampling Soil
 Samples

The sample submitted is dried and passed through a 10 mm sieve followed by a 2 mm sieve. All fibrous matter greater than 10 mm and greater than 2 mm and the material passing through the 2 mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 g to 60 g, then a subsampling routine based on ISO 3082:2017(E) is employed.

NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be subsampled for trace analysis, in accordance with AS 5370:2024.*

Bonded asbestos-
 containing material
 (ACM)

The material is first examined, and any fibres are isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 5370:2024*.

NOTE: Even after disintegration, it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Limit of Reporting
 (LOR)

The performance limitation of the AS 5370:2024* method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory limit of reporting, per se. Examination of large sample size (e.g., 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 5370:2024*, and hence, NATA Accreditation does not cover the performance of this service (non-NATA results are shown with an asterisk).

NOTE: NATA News March 2014, p.7, states in relation to AS 4964-2004: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.

Project Name NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH
Project ID 12657833
Date Sampled May 19, 2025
Report 1222552-AID-V2

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
CB-BH01_0.5-0.95	25-My0061150	May 19, 2025	Approximate Sample 271g Sample consisted of: Off-white fine-grained clayey sandy soil, sand stone and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
CB-BH01_1-1.45	25-My0061151	May 19, 2025	Approximate Sample 472g Sample consisted of: Off-white fine-grained clayey sandy soil, sand stone and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
CB-BH02_0.5-0.95	25-My0061154	May 19, 2025	Approximate Sample 352g Sample consisted of: Grey fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
CB-BH03_0.5-0.95	25-My0061156	May 19, 2025	Approximate Sample 412g Sample consisted of: Grey fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
CB-SS01_0.05-0.1	25-My0061157	May 19, 2025	Approximate Sample 554g Sample consisted of: Grey fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
CB-BH02_0.9-1	25-My0061168	May 19, 2025	Approximate Sample 49g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	May 21, 2025	Indefinite



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Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 +61 7 3902 4600 NATA# 1261 Site# 20794 & 2780	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370 & 2554	Auckland 35 O'Rorke Road Penrose Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Focus) Unit C1/4 Pacific Rise Mount Wellington Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road Gate Pa Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH
Project ID: 12657833

Order No.:
Report #: 1222552
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: May 20, 2025 5:27 PM
Due: May 27, 2025
Priority: 5 Day
Contact Name: Carmen Yi

Eurofins Analytical Services Manager : Adam Bateup

Sample Detail						Asbestos - AS4964	HOLD*	Split - External Lab*	Polycyclic Aromatic Hydrocarbons	Metals M8	Moisture Set	Eurofins Suite B7	Eurofins Suite B7 (filtered metals)	BTEXN and Volatile TRH	BTEXN and Volatile TRH	Suite B10B:TRH/BTEXN/PAH/OC/OPP/PCB/M8	Suite B10B:TRH/BTEXN/PAH/OC/OPP/PCB/M8
Melbourne Laboratory - NATA # 1261 Site # 1254																	
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X	X	X	X	X	X	X	X	X
External Laboratory								X									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID												
1	CB-BH01_0.5-0.95	May 19, 2025		Soil	S25-My0061150	X					X					X	
2	CB-BH01_1-1.45	May 19, 2025		Soil	S25-My0061151	X											
3	CB-BH01_1.5-1.7	May 19, 2025		Soil	S25-My0061152						X	X					
4	CB-BH01_3.0.3.2	May 19, 2025		Soil	S25-My0061153		X										
5	CB-BH02_0.5-0.95	May 19, 2025		Soil	S25-My0061154	X					X					X	
6	CB-BH02_2.5-2.95	May 19, 2025		Soil	S25-My0061155		X										
7	CB-BH03_0.5-0.95	May 19, 2025		Soil	S25-My0061156	X					X	X					
8	CB-SS01_0.05-0.1	May 19, 2025		Soil	S25-My0061157	X					X					X	



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Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

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

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

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

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

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

Company Name:

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GHD Pty Ltd NSW

Level 15, 133 Castlereagh Street

Sydney

NSW 2000

NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH

12657833

Order No.:

Report #:

Phone:

Fax:

1222552

02 9239 7100

02 9239 7199

Received:

Due:

Priority:

Contact Name:

May 20, 2025 5:27 PM

May 27, 2025

5 Day

Carmen Yi

Eurofins Analytical Services Manager : Adam Bateup

Sample Detail						Asbestos - AS4964	HOLD*	Split - External Lab*	Polycyclic Aromatic Hydrocarbons	Metals M8	Moisture Set	Eurofins Suite B7	Eurofins Suite B7 (filtered metals)	BTEXN and Volatile TRH	BTEXN and Volatile TRH	Suite B10B:TRH/BTEXN/PAH/OC/OPP/PCB/M8	Suite B10B:TRH/BTEXN/PAH/OC/OPP/PCB/M8
Melbourne Laboratory - NATA # 1261 Site # 1254																	
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X	X	X	X	X	X	X	X	X
9	QC401	May 19, 2025		Water	S25-My0061158								X				
10	QC403	May 19, 2025		Soil	S25-My0061159				X	X	X						
11	TB401_250519	May 12, 2025		Trip Blank (solid)	S25-My0061160									X			
12	TS401_250519	May 12, 2025		Trip Spike (solid)	S25-My0061161										X		
13	RB401	May 19, 2025		Water	S25-My0061162				X	X							
14	RB402	May 19, 2025		Water	S25-My0061163				X	X							
15	MW1	May 19, 2025		Water	S25-My0061164												X
16	MW4	May 19, 2025		Water	S25-My0061165												X
17	MW6	May 19, 2025		Water	S25-My0061166												X
18	CB-BH03_2.5-2.95	May 19, 2025		Soil	S25-My0061167						X	X					
19	CB-BH02_0.9-1	May 19, 2025		Soil	S25-My0061168	X											
20	CB-BH02_7.9-8	May 19, 2025		Soil	S25-My0061169		X										



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Order No.:
Report #: 1222552
Phone: 02 9239 7100
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Received: May 20, 2025 5:27 PM
Due: May 27, 2025
Priority: 5 Day
Contact Name: Carmen Yi

Project Name: NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH
Project ID: 12657833

Eurofins Analytical Services Manager : Adam Bateup

Sample Detail						Asbestos - AS4964	HOLD*	Split - External Lab*	Polycyclic Aromatic Hydrocarbons	Metals M8	Moisture Set	Eurofins Suite B7	Eurofins Suite B7 (filtered metals)	BTEXN and Volatile TRH	BTEXN and Volatile TRH	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8
Melbourne Laboratory - NATA # 1261 Site # 1254																	
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X	X	X	X	X	X	X	X	X
21	QC402	May 19, 2025		Soil	S25-My0061170			X									
22	QC404	May 19, 2025		Soil	S25-My0061171			X									
23	CB_BH02_1-1.45	May 19, 2025		Soil	S25-My0061172		X										
Test Counts						6	4	2	3	3	7	3	1	1	1	3	3

Internal Quality Control Review and Glossary General

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

Holding Times

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

Units

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

Calculations

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

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

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

Terms

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

Comments

Report 1222552-AID-V2 (amendment to report 1222552-AID) has been issued with corrected sample ID from CB-BH03A_00.5-0.1 to CB-SS01_0.05-0.1 as per client email request.

25-My0061168 The sample received was not collected in an approved asbestos bag and was therefore sub-sampled from the 250mL glass jar. Valid sub-sampling procedures were applied so as to ensure that the sub-sample to be analysed accurately represented the sample received.

Sample Integrity

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

Asbestos Counter/Identifier:

Sayeed Abu Senior Analyst-Asbestos

Authorised by:

Chamath JHM Annakkage Senior Analyst-Asbestos



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Carmen Yi**

Report **1222552-S-V2**
Project name **NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH**
Project ID **12657833**
Received Date **May 20, 2025**

Client Sample ID			CB-BH01_0.5-0.95	CB-BH01_1.5-1.7	CB-BH02_0.5-0.95	CB-BH03_0.5-0.95
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S25-My0061150	S25-My0061152	S25-My0061154	S25-My0061156
Date Sampled			May 19, 2025	May 19, 2025	May 19, 2025	May 19, 2025
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	108	97	127	104
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	64	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	64	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{*N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.9	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	0.7	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.6	< 0.5

Client Sample ID			CB-BH01_0.5-0.95	CB-BH01_1.5-1.7	CB-BH02_0.5-0.95	CB-BH03_0.5-0.95
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S25-My0061150	S25-My0061152	S25-My0061154	S25-My0061156
Date Sampled			May 19, 2025	May 19, 2025	May 19, 2025	May 19, 2025
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	1.8	< 0.5
2-Fluorobiphenyl (surr.)	1	%	90	86	93	83
p-Terphenyl-d14 (surr.)	1	%	79	73	79	82
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4,4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4,4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	-
4,4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
α-HCH	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
β-HCH	0.05	mg/kg	< 0.05	-	< 0.05	-
δ-HCH	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
γ-HCH (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Toxaphene	0.5	mg/kg	< 0.5	-	< 0.5	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchloroendate (surr.)	1	%	81	-	82	-
Tetrachloro-m-xylene (surr.)	1	%	89	-	91	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	-
Bolstar	0.2	mg/kg	< 0.2	-	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	-
Coumaphos	2	mg/kg	< 2	-	< 2	-
Demeton-S	0.2	mg/kg	< 0.2	-	< 0.2	-
Demeton-O	0.2	mg/kg	< 0.2	-	< 0.2	-

Client Sample ID			CB-BH01_0.5-0.95	CB-BH01_1.5-1.7	CB-BH02_0.5-0.95	CB-BH03_0.5-0.95
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S25-My0061150	S25-My0061152	S25-My0061154	S25-My0061156
Date Sampled			May 19, 2025	May 19, 2025	May 19, 2025	May 19, 2025
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Diazinon	0.2	mg/kg	< 0.2	-	< 0.2	-
Dichlorvos	0.2	mg/kg	< 0.2	-	< 0.2	-
Dimethoate	0.2	mg/kg	< 0.2	-	< 0.2	-
Disulfoton	0.2	mg/kg	< 0.2	-	< 0.2	-
EPN	0.2	mg/kg	< 0.2	-	< 0.2	-
Ethion	0.2	mg/kg	< 0.2	-	< 0.2	-
Ethoprop	0.2	mg/kg	< 0.2	-	< 0.2	-
Ethyl parathion	0.2	mg/kg	< 0.2	-	< 0.2	-
Fenitrothion	0.2	mg/kg	< 0.2	-	< 0.2	-
Fensulfothion	0.2	mg/kg	< 0.2	-	< 0.2	-
Fenthion	0.2	mg/kg	< 0.2	-	< 0.2	-
Malathion	0.2	mg/kg	< 0.2	-	< 0.2	-
Merphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Methyl parathion	0.2	mg/kg	< 0.2	-	< 0.2	-
Mevinphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Monocrotophos	2	mg/kg	< 2	-	< 2	-
Naled	0.2	mg/kg	< 0.2	-	< 0.2	-
Omethoate	2	mg/kg	< 2	-	< 2	-
Phorate	0.2	mg/kg	< 0.2	-	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	-	< 0.2	-
Pyrazophos	0.2	mg/kg	< 0.2	-	< 0.2	-
Ronnel	0.2	mg/kg	< 0.2	-	< 0.2	-
Terbufos	0.2	mg/kg	< 0.2	-	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	-	< 0.2	-
Tokuthion	0.2	mg/kg	< 0.2	-	< 0.2	-
Trichloronate	0.2	mg/kg	< 0.2	-	< 0.2	-
Triphenylphosphate (surr.)	1	%	86	-	88	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	-
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	81	-	82	-
Tetrachloro-m-xylene (surr.)	1	%	89	-	91	-
Heavy Metals						
Arsenic	2	mg/kg	6.6	9.1	6.6	6.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	5.7	< 5	11	6.8
Copper	5	mg/kg	12	< 5	11	11
Lead	5	mg/kg	9.3	< 5	13	17
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	14	< 5	16
Zinc	5	mg/kg	27	46	23	47
Sample Properties						
% Moisture	1	%	15	22	18	24

Client Sample ID			CB-SS01_0.05-0.1	QC403	TB401_250519	TS401_250519
Sample Matrix			Soil	Soil	Trip Blank (solid)	Trip Spike (solid)
Eurofins Sample No.			S25-My0061157	S25-My0061159	S25-My0061160	S25-My0061161
Date Sampled			May 19, 2025	May 19, 2025	May 12, 2025	May 12, 2025
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	84	-	132	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	-	-	-
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	-	-
TRH C15-C28	50	mg/kg	< 50	-	-	-
TRH C29-C36	50	mg/kg	< 50	-	-	-
TRH C10-C36 (Total)	50	mg/kg	< 50	-	-	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	-	-
TRH >C10-C16 less Naphthalene (F2) ^{*N01}	50	mg/kg	< 50	-	-	-
TRH >C16-C34	100	mg/kg	< 100	-	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	84	70	-	-
p-Terphenyl-d14 (surr.)	1	%	73	59	-	-

Client Sample ID			CB-SS01_0.05-0.1	QC403	TB401_250519	TS401_250519
Sample Matrix			Soil	Soil	Trip Blank (solid)	Trip Spike (solid)
Eurofins Sample No.			S25-My0061157	S25-My0061159	S25-My0061160	S25-My0061161
Date Sampled			May 19, 2025	May 19, 2025	May 12, 2025	May 12, 2025
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	-
4,4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4,4'-DDE	0.05	mg/kg	< 0.05	-	-	-
4,4'-DDT	0.05	mg/kg	< 0.05	-	-	-
a-HCH	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-HCH	0.05	mg/kg	< 0.05	-	-	-
d-HCH	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	-
Endrin	0.05	mg/kg	< 0.05	-	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-	-
g-HCH (Lindane)	0.05	mg/kg	< 0.05	-	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	-
Methoxychlor	0.05	mg/kg	< 0.05	-	-	-
Toxaphene	0.5	mg/kg	< 0.5	-	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	-	-
Dibutylchloroendate (surr.)	1	%	77	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	82	-	-	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	-	-	-
Bolstar	0.2	mg/kg	< 0.2	-	-	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	-	-	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-	-	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	-	-	-
Coumaphos	2	mg/kg	< 2	-	-	-
Demeton-S	0.2	mg/kg	< 0.2	-	-	-
Demeton-O	0.2	mg/kg	< 0.2	-	-	-
Diazinon	0.2	mg/kg	< 0.2	-	-	-
Dichlorvos	0.2	mg/kg	< 0.2	-	-	-
Dimethoate	0.2	mg/kg	< 0.2	-	-	-
Disulfoton	0.2	mg/kg	< 0.2	-	-	-
EPN	0.2	mg/kg	< 0.2	-	-	-
Ethion	0.2	mg/kg	< 0.2	-	-	-
Ethoprop	0.2	mg/kg	< 0.2	-	-	-
Ethyl parathion	0.2	mg/kg	< 0.2	-	-	-
Fenitrothion	0.2	mg/kg	< 0.2	-	-	-
Fensulfothion	0.2	mg/kg	< 0.2	-	-	-
Fenthion	0.2	mg/kg	< 0.2	-	-	-
Malathion	0.2	mg/kg	< 0.2	-	-	-

Client Sample ID			CB-SS01_0.05-0.1	QC403	TB401_250519	TS401_250519
Sample Matrix			Soil	Soil	Trip Blank (solid)	Trip Spike (solid)
Eurofins Sample No.			S25-My0061157	S25-My0061159	S25-My0061160	S25-My0061161
Date Sampled			May 19, 2025	May 19, 2025	May 12, 2025	May 12, 2025
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Merphos	0.2	mg/kg	< 0.2	-	-	-
Methyl parathion	0.2	mg/kg	< 0.2	-	-	-
Mevinphos	0.2	mg/kg	< 0.2	-	-	-
Monocrotophos	2	mg/kg	< 2	-	-	-
Naled	0.2	mg/kg	< 0.2	-	-	-
Omethoate	2	mg/kg	< 2	-	-	-
Phorate	0.2	mg/kg	< 0.2	-	-	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	-	-	-
Pyrazophos	0.2	mg/kg	< 0.2	-	-	-
Ronnel	0.2	mg/kg	< 0.2	-	-	-
Terbufos	0.2	mg/kg	< 0.2	-	-	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	-	-	-
Tokuthion	0.2	mg/kg	< 0.2	-	-	-
Trichloronate	0.2	mg/kg	< 0.2	-	-	-
Triphenylphosphate (surr.)	1	%	80	-	-	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	-	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	-	-
Total PCB*	0.1	mg/kg	< 0.1	-	-	-
Dibutylchlorendate (surr.)	1	%	77	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	82	-	-	-
Heavy Metals						
Arsenic	2	mg/kg	< 2	2.7	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	5.5	5.4	-	-
Copper	5	mg/kg	6.0	< 5	-	-
Lead	5	mg/kg	6.6	< 5	-	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	-	-
Nickel	5	mg/kg	< 5	< 5	-	-
Zinc	5	mg/kg	43	< 5	-	-
Sample Properties						
% Moisture	1	%	20	16	-	-
BTEX and Naphthalene						
Naphthalene ^{NO2}	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	1	%	-	-	-	88
Total Recoverable Hydrocarbons						
Naphthalene	1	%	-	-	-	75
TRH C6-C9	1	%	-	-	-	89

Client Sample ID			CB-SS01_0.05-0.1	QC403	TB401_250519	TS401_250519
Sample Matrix			Soil	Soil	Trip Blank (solid)	Trip Spike (solid)
Eurofins Sample No.			S25-My0061157	S25-My0061159	S25-My0061160	S25-My0061161
Date Sampled			May 19, 2025	May 19, 2025	May 12, 2025	May 12, 2025
Test/Reference	LOR	Unit				
BTEX						
Benzene	1	%	-	-	-	90
Ethylbenzene	1	%	-	-	-	88
m&p-Xylenes	1	%	-	-	-	87
o-Xylene	1	%	-	-	-	87
Toluene	1	%	-	-	-	90
Xylenes - Total	1	%	-	-	-	87
4-Bromofluorobenzene (surr.)	1	%	-	-	-	106

Client Sample ID			CB-BH03_2.5-2.95
Sample Matrix			Soil
Eurofins Sample No.			S25-My0061167
Date Sampled			May 19, 2025
Test/Reference	LOR	Unit	
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	118
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5
Total Recoverable Hydrocarbons			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2) ^{*N01}	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5

Client Sample ID			CB-BH03_2.5-2.95
Sample Matrix			Soil
Eurofins Sample No.			S25-My0061167
Date Sampled			May 19, 2025
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	85
p-Terphenyl-d14 (surr.)	1	%	75
Heavy Metals			
Arsenic	2	mg/kg	2.7
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	5.4
Copper	5	mg/kg	< 5
Lead	5	mg/kg	< 5
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	< 5
Sample Properties			
% Moisture	1	%	16

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
BTEX	Sydney	May 22, 2025	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Total Recoverable Hydrocarbons	Sydney	May 22, 2025	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	May 22, 2025	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 22, 2025	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	May 22, 2025	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	May 22, 2025	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Sydney	May 22, 2025	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Organophosphorus Pesticides	Sydney	May 22, 2025	14 Days
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS			
Polychlorinated Biphenyls	Sydney	May 22, 2025	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Metals M8	Sydney	May 22, 2025	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	May 21, 2025	14 Days
- Method: LTM-GEN-7080 Moisture			



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

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

Auckland	Auckland (Focus)	Christchurch	Tauranga
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Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH
Project ID: 12657833

Order No.:
Report #: 1222552
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: May 20, 2025 5:27 PM
Due: May 27, 2025
Priority: 5 Day
Contact Name: Carmen Yi

Eurofins Analytical Services Manager : Adam Bateup

Sample Detail						Asbestos - AS4964	HOLD*	Split - External Lab*	Polycyclic Aromatic Hydrocarbons	Metals M8	Moisture Set	Eurofins Suite B7	Eurofins Suite B7 (filtered metals)	BTEXN and Volatile TRH	BTEXN and Volatile TRH	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8
Melbourne Laboratory - NATA # 1261 Site # 1254																	
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X	X	X	X	X	X	X	X	X
External Laboratory								X									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID												
1	CB-BH01_0.5-0.95	May 19, 2025		Soil	S25-My0061150	X					X					X	
2	CB-BH01_1-1.45	May 19, 2025		Soil	S25-My0061151	X											
3	CB-BH01_1.5-1.7	May 19, 2025		Soil	S25-My0061152						X	X					
4	CB-BH01_3.0.3.2	May 19, 2025		Soil	S25-My0061153		X										
5	CB-BH02_0.5-0.95	May 19, 2025		Soil	S25-My0061154	X					X					X	
6	CB-BH02_2.5-2.95	May 19, 2025		Soil	S25-My0061155		X										
7	CB-BH03_0.5-0.95	May 19, 2025		Soil	S25-My0061156	X					X	X					
8	CB-SS01_0.05-0.1	May 19, 2025		Soil	S25-My0061157	X					X					X	



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Eurofins Analytical Services Manager : Adam Bateup

Sample Detail						Asbestos - AS4964	HOLD*	Split - External Lab*	Polycyclic Aromatic Hydrocarbons	Metals M8	Moisture Set	Eurofins Suite B7	Eurofins Suite B7 (filtered metals)	BTEXN and Volatile TRH	BTEXN and Volatile TRH	Suite B10B:TRH/BTEXN/PAH/OC/POP/PCB/M8	Suite B10B:TRH/BTEXN/PAH/OC/POP/PCB/M8
Melbourne Laboratory - NATA # 1261 Site # 1254																	
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X	X	X	X	X	X	X	X	X
9	QC401	May 19, 2025		Water	S25-My0061158								X				
10	QC403	May 19, 2025		Soil	S25-My0061159				X	X	X						
11	TB401_250519	May 12, 2025		Trip Blank (solid)	S25-My0061160									X			
12	TS401_250519	May 12, 2025		Trip Spike (solid)	S25-My0061161										X		
13	RB401	May 19, 2025		Water	S25-My0061162				X	X							
14	RB402	May 19, 2025		Water	S25-My0061163				X	X							
15	MW1	May 19, 2025		Water	S25-My0061164												X
16	MW4	May 19, 2025		Water	S25-My0061165												X
17	MW6	May 19, 2025		Water	S25-My0061166												X
18	CB-BH03_2.5-2.95	May 19, 2025		Soil	S25-My0061167						X	X					
19	CB-BH02_0.9-1	May 19, 2025		Soil	S25-My0061168	X											
20	CB-BH02_7.9-8	May 19, 2025		Soil	S25-My0061169		X										



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Melbourne Laboratory - NATA # 1261 Site # 1254																	
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X	X	X	X	X	X	X	X	X
21	QC402	May 19, 2025		Soil	S25-My0061170			X									
22	QC404	May 19, 2025		Soil	S25-My0061171			X									
23	CB_BH02_1-1.45	May 19, 2025		Soil	S25-My0061172		X										
Test Counts						6	4	2	3	3	7	3	1	1	1	3	3

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

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

QC - Acceptance Criteria

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

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4,4'-DDD	mg/kg	< 0.05			0.05	Pass	
4,4'-DDE	mg/kg	< 0.05			0.05	Pass	
4,4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Total Recoverable Hydrocarbons							
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Total Recoverable Hydrocarbons							
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	72			70-130	Pass	
Toluene	%	84			70-130	Pass	
Ethylbenzene	%	91			70-130	Pass	
m&p-Xylenes	%	105			70-130	Pass	
o-Xylene	%	102			70-130	Pass	
Xylenes - Total*	%	104			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	123			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	80			70-130	Pass	
TRH C6-C10	%	82			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	97			70-130	Pass	
Acenaphthylene	%	97			70-130	Pass	
Anthracene	%	105			70-130	Pass	
Benz(a)anthracene	%	93			70-130	Pass	
Benzo(a)pyrene	%	98			70-130	Pass	
Benzo(b&j)fluoranthene	%	98			70-130	Pass	
Benzo(g,h,i)perylene	%	105			70-130	Pass	
Benzo(k)fluoranthene	%	98			70-130	Pass	
Chrysene	%	102			70-130	Pass	
Dibenz(a,h)anthracene	%	99			70-130	Pass	
Fluoranthene	%	93			70-130	Pass	
Fluorene	%	98			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	99			70-130	Pass	
Naphthalene	%	99			70-130	Pass	
Phenanthrene	%	89			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Pyrene	%	96			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	102			70-130	Pass	
4.4'-DDD	%	97			70-130	Pass	
4.4'-DDE	%	105			70-130	Pass	
4.4'-DDT	%	101			70-130	Pass	
a-HCH	%	105			70-130	Pass	
Aldrin	%	105			70-130	Pass	
b-HCH	%	100			70-130	Pass	
d-HCH	%	98			70-130	Pass	
Dieldrin	%	104			70-130	Pass	
Endosulfan I	%	101			70-130	Pass	
Endosulfan II	%	103			70-130	Pass	
Endosulfan sulphate	%	101			70-130	Pass	
Endrin	%	103			70-130	Pass	
Endrin aldehyde	%	91			70-130	Pass	
Endrin ketone	%	102			70-130	Pass	
g-HCH (Lindane)	%	105			70-130	Pass	
Heptachlor	%	105			70-130	Pass	
Heptachlor epoxide	%	97			70-130	Pass	
Hexachlorobenzene	%	103			70-130	Pass	
Methoxychlor	%	120			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	127			70-130	Pass	
Dimethoate	%	117			70-130	Pass	
Ethion	%	126			70-130	Pass	
Fenitrothion	%	114			70-130	Pass	
Methyl parathion	%	114			70-130	Pass	
Mevinphos	%	125			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	106			70-130	Pass	
Aroclor-1260	%	107			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	89			80-120	Pass	
Cadmium	%	89			80-120	Pass	
Chromium	%	91			80-120	Pass	
Copper	%	93			80-120	Pass	
Lead	%	87			80-120	Pass	
Mercury	%	89			80-120	Pass	
Nickel	%	92			80-120	Pass	
Zinc	%	92			80-120	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C10-C14	%	113			70-130	Pass	
TRH >C10-C16	%	102			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C10-C14	%	118			70-130	Pass	
TRH >C10-C16	%	117			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C10-C14	S25-My0070133	NCP	%	79			70-130	Pass	
TRH >C10-C16	S25-My0070133	NCP	%	78			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Benzo(k)fluoranthene	S25-My0055217	NCP	%	82			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Endrin aldehyde	S25-My0057785	NCP	%	110			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S25-My0059558	NCP	%	94			75-125	Pass	
Cadmium	S25-My0059558	NCP	%	100			75-125	Pass	
Chromium	S25-My0059558	NCP	%	96			75-125	Pass	
Copper	S25-My0059558	NCP	%	98			75-125	Pass	
Lead	S25-My0059558	NCP	%	98			75-125	Pass	
Mercury	S25-My0059558	NCP	%	99			75-125	Pass	
Nickel	S25-My0059558	NCP	%	98			75-125	Pass	
Zinc	S25-My0059558	NCP	%	102			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S25-My0061154	CP	%	90			70-130	Pass	
Acenaphthylene	S25-My0061154	CP	%	85			70-130	Pass	
Anthracene	S25-My0061154	CP	%	86			70-130	Pass	
Benzo(a)anthracene	S25-My0061154	CP	%	83			70-130	Pass	
Benzo(a)pyrene	S25-My0061154	CP	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	S25-My0061154	CP	%	88			70-130	Pass	
Benzo(g,h,i)perylene	S25-My0061154	CP	%	101			70-130	Pass	
Chrysene	S25-My0061154	CP	%	89			70-130	Pass	
Dibenz(a,h)anthracene	S25-My0061154	CP	%	88			70-130	Pass	
Fluoranthene	S25-My0061154	CP	%	86			70-130	Pass	
Fluorene	S25-My0061154	CP	%	90			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S25-My0061154	CP	%	92			70-130	Pass	
Naphthalene	S25-My0061154	CP	%	90			70-130	Pass	
Phenanthrene	S25-My0061154	CP	%	80			70-130	Pass	
Pyrene	S25-My0061154	CP	%	88			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S25-My0061154	CP	%	90			70-130	Pass	
4,4'-DDD	S25-My0061154	CP	%	92			70-130	Pass	
4,4'-DDE	S25-My0061154	CP	%	93			70-130	Pass	
4,4'-DDT	S25-My0061154	CP	%	74			70-130	Pass	
a-HCH	S25-My0061154	CP	%	90			70-130	Pass	
Aldrin	S25-My0061154	CP	%	89			70-130	Pass	
b-HCH	S25-My0061154	CP	%	88			70-130	Pass	
d-HCH	S25-My0061154	CP	%	87			70-130	Pass	
Dieldrin	S25-My0061154	CP	%	96			70-130	Pass	
Endosulfan I	S25-My0061154	CP	%	89			70-130	Pass	
Endosulfan II	S25-My0061154	CP	%	87			70-130	Pass	
Endosulfan sulphate	S25-My0061154	CP	%	84			70-130	Pass	
Endrin	S25-My0061154	CP	%	92			70-130	Pass	
Endrin ketone	S25-My0061154	CP	%	86			70-130	Pass	
g-HCH (Lindane)	S25-My0061154	CP	%	92			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Heptachlor	S25-My0061154	CP	%	88			70-130	Pass	
Heptachlor epoxide	S25-My0061154	CP	%	86			70-130	Pass	
Hexachlorobenzene	S25-My0061154	CP	%	92			70-130	Pass	
Methoxychlor	S25-My0061154	CP	%	89			70-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Diazinon	S25-My0061154	CP	%	87			70-130	Pass	
Dimethoate	S25-My0061154	CP	%	75			70-130	Pass	
Ethion	S25-My0061154	CP	%	93			70-130	Pass	
Fenitrothion	S25-My0061154	CP	%	84			70-130	Pass	
Methyl parathion	S25-My0061154	CP	%	87			70-130	Pass	
Mevinphos	S25-My0061154	CP	%	88			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S25-My0061154	CP	%	90			70-130	Pass	
Aroclor-1260	S25-My0061154	CP	%	91			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S25-My0061167	CP	%	87			70-130	Pass	
Toluene	S25-My0061167	CP	%	77			70-130	Pass	
Ethylbenzene	S25-My0061167	CP	%	89			70-130	Pass	
m&p-Xylenes	S25-My0061167	CP	%	89			70-130	Pass	
o-Xylene	S25-My0061167	CP	%	89			70-130	Pass	
Xylenes - Total*	S25-My0061167	CP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S25-My0061167	CP	%	87			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons				Result 1					
TRH C6-C9	S25-My0061167	CP	%	77			70-130	Pass	
TRH C6-C10	S25-My0061167	CP	%	76			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S25-My0065464	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S25-My0065464	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S25-My0065464	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S25-My0065464	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S25-My0065464	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S25-My0065464	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S25-My0065464	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S25-My0065464	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S25-My0070135	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S25-My0070135	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S25-My0070135	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C6-C10	S25-My0065464	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S25-My0070135	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S25-My0070135	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S25-My0070135	NCP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S25-My0066565	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S25-My0057787	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-HCH	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-HCH	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-HCH	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-HCH (Lindane)	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S25-My0057787	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	S25-My0057787	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	S25-My0057787	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Ethion	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfothion	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	S25-My0057787	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	S25-My0057787	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tokuthion	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	S25-My0057787	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S25-My0057787	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	S25-My0057787	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S25-My0057787	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	S25-My0057787	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	S25-My0057787	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	S25-My0057787	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1260	S25-My0057787	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	S25-My0057787	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S25-My0059827	NCP	mg/kg	7.2	9.1	23	30%	Pass
Cadmium	S25-My0059827	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S25-My0059827	NCP	mg/kg	17	20	17	30%	Pass
Copper	S25-My0059827	NCP	mg/kg	14	15	11	30%	Pass
Lead	S25-My0059827	NCP	mg/kg	17	17	1.0	30%	Pass
Mercury	S25-My0059827	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	S25-My0059827	NCP	mg/kg	7.2	8.3	14	30%	Pass
Zinc	S25-My0059827	NCP	mg/kg	28	28	<1	30%	Pass
Duplicate								
Sample Properties				Result 1	Result 2	RPD		
% Moisture	S25-My0061888	NCP	%	16	13	24	30%	Pass

Comments

Report 1222552-S-V2 (amendment to report 1222552-S) has been issued with corrected sample ID from CB-BH03A_00.5-0.1 to CB-SS01_0.05-0.1 as per client email 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

Qualifier Codes/Comments

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

Authorised by:

Adam Bateup	Analytical Services Manager
Chamath JHM Annakkage	Senior Analyst-Asbestos
Mickael Ros	Senior Analyst-Metal
Raymond Siu	Senior Analyst-Volatile
Roopesh Rangarajan	Senior Analyst-Organic
Ryan Phillips	Senior Analyst-Sample Properties



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



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inspection, proficiency testing scheme providers and
reference materials producers reports and certificates.

Attention: **Carmen Yi**

Report **1222552-W-V2**
Project name **NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH**
Project ID **12657833**
Received Date **May 20, 2025**

Client Sample ID			QC401	RB401	RB402	MW1
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			S25-My0061158	S25-My0061162	S25-My0061163	S25-My0061164
Date Sampled			May 19, 2025	May 19, 2025	May 19, 2025	May 19, 2025
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	0.02	mg/L	< 0.02	-	-	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	-	-	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	-	-	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	-	-	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	-	-	< 0.1
TRH C6-C10	0.02	mg/L	< 0.02	-	-	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	-	-	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	-	-	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{*N01}	0.05	mg/L	< 0.05	-	-	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	-	-	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	-	-	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	-	-	< 0.1
BTEX						
Benzene	0.001	mg/L	< 0.001	-	-	< 0.001
Toluene	0.001	mg/L	< 0.001	-	-	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	-	-	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	-	-	< 0.002
o-Xylene	0.001	mg/L	< 0.001	-	-	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	-	-	< 0.003
4-Bromofluorobenzene (surr.)	1	%	95	-	-	73
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	-	-	< 0.01
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001

Client Sample ID Sample Matrix Eurofins Sample No. Date Sampled Test/Reference	LOR	Unit	QC401 Water S25- My0061158 May 19, 2025	RB401 Water S25- My0061162 May 19, 2025	RB402 Water S25- My0061163 May 19, 2025	MW1 Water S25- My0061164 May 19, 2025
Polycyclic Aromatic Hydrocarbons						
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	54	78	84	70
p-Terphenyl-d14 (surr.)	1	%	INT	INT	133	91
Heavy Metals						
Arsenic	0.001	mg/L	-	< 0.001	< 0.001	-
Arsenic (filtered)	0.001	mg/L	0.007	-	-	0.17
Cadmium	0.0002	mg/L	-	< 0.0002	< 0.0002	-
Cadmium (filtered)	0.0002	mg/L	< 0.0002	-	-	< 0.0002
Chromium	0.001	mg/L	-	< 0.001	< 0.001	-
Chromium (filtered)	0.001	mg/L	0.002	-	-	< 0.001
Copper	0.001	mg/L	-	< 0.001	< 0.001	-
Copper (filtered)	0.001	mg/L	0.001	-	-	< 0.001
Lead	0.001	mg/L	-	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	-	-	< 0.001
Mercury	0.0001	mg/L	-	< 0.0001	< 0.0001	-
Mercury (filtered)	0.0001	mg/L	< 0.0001	-	-	< 0.0001
Nickel	0.001	mg/L	-	< 0.001	< 0.001	-
Nickel (filtered)	0.001	mg/L	< 0.001	-	-	< 0.001
Zinc	0.005	mg/L	-	< 0.005	< 0.005	-
Zinc (filtered)	0.005	mg/L	0.016	-	-	0.009
Organochlorine Pesticides						
Chlordanes - Total	0.002	mg/L	-	-	-	< 0.002
4,4'-DDD	0.0002	mg/L	-	-	-	< 0.0002
4,4'-DDE	0.0002	mg/L	-	-	-	< 0.0002
4,4'-DDT	0.0002	mg/L	-	-	-	< 0.0002
α-HCH	0.0002	mg/L	-	-	-	< 0.0002
Aldrin	0.0002	mg/L	-	-	-	< 0.0002
β-HCH	0.0002	mg/L	-	-	-	< 0.0002
δ-HCH	0.0002	mg/L	-	-	-	< 0.0002
Dieldrin	0.0002	mg/L	-	-	-	< 0.0002
Endosulfan I	0.0002	mg/L	-	-	-	< 0.0002
Endosulfan II	0.0002	mg/L	-	-	-	< 0.0002
Endosulfan sulphate	0.0002	mg/L	-	-	-	< 0.0002
Endrin	0.0002	mg/L	-	-	-	< 0.0002
Endrin aldehyde	0.0002	mg/L	-	-	-	< 0.0002
Endrin ketone	0.0002	mg/L	-	-	-	< 0.0002
γ-HCH (Lindane)	0.0002	mg/L	-	-	-	< 0.0002
Heptachlor	0.0002	mg/L	-	-	-	< 0.0002
Heptachlor epoxide	0.0002	mg/L	-	-	-	< 0.0002
Hexachlorobenzene	0.0002	mg/L	-	-	-	< 0.0002
Methoxychlor	0.0002	mg/L	-	-	-	< 0.0002
Toxaphene	0.005	mg/L	-	-	-	< 0.005
Aldrin and Dieldrin (Total)*	0.0002	mg/L	-	-	-	< 0.0002
DDT + DDE + DDD (Total)*	0.0002	mg/L	-	-	-	< 0.0002
Vic EPA IWRG 621 OCP (Total)*	0.002	mg/L	-	-	-	< 0.002

Client Sample ID Sample Matrix Eurofins Sample No. Date Sampled Test/Reference	LOR	Unit	QC401 Water S25- My0061158 May 19, 2025	RB401 Water S25- My0061162 May 19, 2025	RB402 Water S25- My0061163 May 19, 2025	MW1 Water S25- My0061164 May 19, 2025
Organochlorine Pesticides						
Vic EPA IWRG 621 Other OCP (Total)*	0.002	mg/L	-	-	-	< 0.002
Dibutylchlorendate (surr.)	1	%	-	-	-	128
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	80
Organophosphorus Pesticides						
Azinphos-methyl	0.002	mg/L	-	-	-	< 0.002
Bolstar	0.002	mg/L	-	-	-	< 0.002
Chlorfenvinphos	0.02	mg/L	-	-	-	< 0.02
Chlorpyrifos	0.002	mg/L	-	-	-	< 0.002
Chlorpyrifos-methyl	0.002	mg/L	-	-	-	< 0.002
Coumaphos	0.02	mg/L	-	-	-	< 0.02
Demeton-S	0.002	mg/L	-	-	-	< 0.002
Demeton-O	0.002	mg/L	-	-	-	< 0.002
Diazinon	0.002	mg/L	-	-	-	< 0.002
Dichlorvos	0.002	mg/L	-	-	-	< 0.002
Dimethoate	0.002	mg/L	-	-	-	< 0.002
Disulfoton	0.002	mg/L	-	-	-	< 0.002
EPN	0.002	mg/L	-	-	-	< 0.002
Ethion	0.002	mg/L	-	-	-	< 0.002
Ethoprop	0.002	mg/L	-	-	-	< 0.002
Ethyl parathion	0.002	mg/L	-	-	-	< 0.002
Fenitrothion	0.002	mg/L	-	-	-	< 0.002
Fensulfothion	0.002	mg/L	-	-	-	< 0.002
Fenthion	0.002	mg/L	-	-	-	< 0.002
Malathion	0.002	mg/L	-	-	-	< 0.002
Merphos	0.002	mg/L	-	-	-	< 0.002
Methyl parathion	0.002	mg/L	-	-	-	< 0.002
Mevinphos	0.002	mg/L	-	-	-	< 0.002
Monocrotophos	0.002	mg/L	-	-	-	< 0.002
Naled	0.002	mg/L	-	-	-	< 0.002
Omethoate	0.02	mg/L	-	-	-	< 0.02
Phorate	0.002	mg/L	-	-	-	< 0.002
Pirimiphos-methyl	0.02	mg/L	-	-	-	< 0.02
Pyrazophos	0.002	mg/L	-	-	-	< 0.002
Ronnel	0.002	mg/L	-	-	-	< 0.002
Terbufos	0.002	mg/L	-	-	-	< 0.002
Tetrachlorvinphos	0.002	mg/L	-	-	-	< 0.002
Tokuthion	0.002	mg/L	-	-	-	< 0.002
Trichloronate	0.002	mg/L	-	-	-	< 0.002
Triphenylphosphate (surr.)	1	%	-	-	-	114
Polychlorinated Biphenyls						
Aroclor-1016	0.005	mg/L	-	-	-	< 0.005
Aroclor-1221	0.005	mg/L	-	-	-	< 0.005
Aroclor-1232	0.005	mg/L	-	-	-	< 0.005
Aroclor-1242	0.005	mg/L	-	-	-	< 0.005
Aroclor-1248	0.005	mg/L	-	-	-	< 0.005
Aroclor-1254	0.005	mg/L	-	-	-	< 0.005
Aroclor-1260	0.005	mg/L	-	-	-	< 0.005
Total PCB*	0.005	mg/L	-	-	-	< 0.005
Dibutylchlorendate (surr.)	1	%	-	-	-	128
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	80

Client Sample ID			MW4	MW6
Sample Matrix			Water	Water
Eurofins Sample No.			S25-My0061165	S25-My0061166
Date Sampled			May 19, 2025	May 19, 2025
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons				
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{*N01}	0.05	mg/L	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1
BTEX				
Benzene	0.001	mg/L	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001
Xylenes - Total*	0.003	mg/L	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	75	69
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.001	mg/L	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001
Indeno(1,2,3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	88	81
p-Terphenyl-d14 (surr.)	1	%	74	INT
Heavy Metals				
Arsenic (filtered)	0.001	mg/L	0.001	0.007
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002
Chromium (filtered)	0.001	mg/L	0.001	0.002
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001

Client Sample ID			MW4	MW6
Sample Matrix			Water	Water
Eurofins Sample No.			S25-My0061165	S25-My0061166
Date Sampled			May 19, 2025	May 19, 2025
Test/Reference	LOR	Unit		
Heavy Metals				
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001
Zinc (filtered)	0.005	mg/L	0.008	0.014
Organochlorine Pesticides				
Chlordanes - Total	0.002	mg/L	< 0.002	< 0.002
4,4'-DDD	0.0002	mg/L	< 0.0002	< 0.0002
4,4'-DDE	0.0002	mg/L	< 0.0002	< 0.0002
4,4'-DDT	0.0002	mg/L	< 0.0002	< 0.0002
α-HCH	0.0002	mg/L	< 0.0002	< 0.0002
Aldrin	0.0002	mg/L	< 0.0002	< 0.0002
β-HCH	0.0002	mg/L	< 0.0002	< 0.0002
δ-HCH	0.0002	mg/L	< 0.0002	< 0.0002
Dieldrin	0.0002	mg/L	< 0.0002	< 0.0002
Endosulfan I	0.0002	mg/L	< 0.0002	< 0.0002
Endosulfan II	0.0002	mg/L	< 0.0002	< 0.0002
Endosulfan sulphate	0.0002	mg/L	< 0.0002	< 0.0002
Endrin	0.0002	mg/L	< 0.0002	< 0.0002
Endrin aldehyde	0.0002	mg/L	< 0.0002	< 0.0002
Endrin ketone	0.0002	mg/L	< 0.0002	< 0.0002
γ-HCH (Lindane)	0.0002	mg/L	< 0.0002	< 0.0002
Heptachlor	0.0002	mg/L	< 0.0002	< 0.0002
Heptachlor epoxide	0.0002	mg/L	< 0.0002	< 0.0002
Hexachlorobenzene	0.0002	mg/L	< 0.0002	< 0.0002
Methoxychlor	0.0002	mg/L	< 0.0002	< 0.0002
Toxaphene	0.005	mg/L	< 0.005	< 0.005
Aldrin and Dieldrin (Total)*	0.0002	mg/L	< 0.0002	< 0.0002
DDT + DDE + DDD (Total)*	0.0002	mg/L	< 0.0002	< 0.0002
Vic EPA IWRG 621 OCP (Total)*	0.002	mg/L	< 0.002	< 0.002
Vic EPA IWRG 621 Other OCP (Total)*	0.002	mg/L	< 0.002	< 0.002
Dibutylchlorodate (surr.)	1	%	82	INT
Tetrachloro-m-xylene (surr.)	1	%	73	INT
Organophosphorus Pesticides				
Azinphos-methyl	0.002	mg/L	< 0.002	< 0.002
Bolstar	0.002	mg/L	< 0.002	< 0.002
Chlorfenvinphos	0.02	mg/L	< 0.02	< 0.02
Chlorpyrifos	0.002	mg/L	< 0.002	< 0.002
Chlorpyrifos-methyl	0.002	mg/L	< 0.002	< 0.002
Coumaphos	0.02	mg/L	< 0.02	< 0.02
Demeton-S	0.002	mg/L	< 0.002	< 0.002
Demeton-O	0.002	mg/L	< 0.002	< 0.002
Diazinon	0.002	mg/L	< 0.002	< 0.002
Dichlorvos	0.002	mg/L	< 0.002	< 0.002
Dimethoate	0.002	mg/L	< 0.002	< 0.002
Disulfoton	0.002	mg/L	< 0.002	< 0.002
EPN	0.002	mg/L	< 0.002	< 0.002
Ethion	0.002	mg/L	< 0.002	< 0.002
Ethoprop	0.002	mg/L	< 0.002	< 0.002
Ethyl parathion	0.002	mg/L	< 0.002	< 0.002
Fenitrothion	0.002	mg/L	< 0.002	< 0.002

Client Sample ID Sample Matrix Eurofins Sample No. Date Sampled Test/Reference	LOR	Unit	MW4 Water S25- My0061165 May 19, 2025	MW6 Water S25- My0061166 May 19, 2025
Organophosphorus Pesticides				
Fensulfothion	0.002	mg/L	< 0.002	< 0.002
Fenthion	0.002	mg/L	< 0.002	< 0.002
Malathion	0.002	mg/L	< 0.002	< 0.002
Merphos	0.002	mg/L	< 0.002	< 0.002
Methyl parathion	0.002	mg/L	< 0.002	< 0.002
Mevinphos	0.002	mg/L	< 0.002	< 0.002
Monocrotophos	0.002	mg/L	< 0.002	< 0.002
Naled	0.002	mg/L	< 0.002	< 0.002
Omethoate	0.02	mg/L	< 0.02	< 0.02
Phorate	0.002	mg/L	< 0.002	< 0.002
Pirimiphos-methyl	0.02	mg/L	< 0.02	< 0.02
Pyrazophos	0.002	mg/L	< 0.002	< 0.002
Ronnel	0.002	mg/L	< 0.002	< 0.002
Terbufos	0.002	mg/L	< 0.002	< 0.002
Tetrachlorvinphos	0.002	mg/L	< 0.002	< 0.002
Tokuthion	0.002	mg/L	< 0.002	< 0.002
Trichloronate	0.002	mg/L	< 0.002	< 0.002
Triphenylphosphate (surr.)	1	%	115	77
Polychlorinated Biphenyls				
Aroclor-1016	0.005	mg/L	< 0.005	< 0.005
Aroclor-1221	0.005	mg/L	< 0.005	< 0.005
Aroclor-1232	0.005	mg/L	< 0.005	< 0.005
Aroclor-1242	0.005	mg/L	< 0.005	< 0.005
Aroclor-1248	0.005	mg/L	< 0.005	< 0.005
Aroclor-1254	0.005	mg/L	< 0.005	< 0.005
Aroclor-1260	0.005	mg/L	< 0.005	< 0.005
Total PCB*	0.005	mg/L	< 0.005	< 0.005
Dibutylchloredate (surr.)	1	%	82	INT
Tetrachloro-m-xylene (surr.)	1	%	73	INT

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 23, 2025	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 21, 2025	7 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	May 23, 2025	7 Days
BTEX - Method: LTM-ORG-2010 BTEX and Volatile TRH	Sydney	May 21, 2025	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	May 23, 2025	7 Days
Metals M8 filtered - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	May 21, 2025	28 Days
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	May 23, 2025	7 Days
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS	Sydney	May 23, 2025	7 Days
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	May 23, 2025	7 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	May 21, 2025	28 Days



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ABN: 50 005 085 521

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 +61 7 3902 4600 NATA# 1261 Site# 20794 & 2780	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079
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ABN: 91 05 0159 898

Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370 & 2554
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NZBN: 9429046024954

Auckland 35 O'Rorke Road Penrose Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Focus) Unit C1/4 Pacific Rise Mount Wellington Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road Gate Pa Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Order No.:
Report #: 1222552
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: May 20, 2025 5:27 PM
Due: May 27, 2025
Priority: 5 Day
Contact Name: Carmen Yi

Project Name: NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH
Project ID: 12657833

Eurofins Analytical Services Manager : Adam Bateup

Sample Detail						Asbestos - AS4964	HOLD*	Split - External Lab*	Polycyclic Aromatic Hydrocarbons	Metals M8	Moisture Set	Eurofins Suite B7	Eurofins Suite B7 (filtered metals)	BTEXN and Volatile TRH	BTEXN and Volatile TRH	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8
Melbourne Laboratory - NATA # 1261 Site # 1254																	
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X	X	X	X	X	X	X	X	X
External Laboratory								X									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID												
1	CB-BH01_0.5-0.95	May 19, 2025		Soil	S25-My0061150	X					X					X	
2	CB-BH01_1-1.45	May 19, 2025		Soil	S25-My0061151	X											
3	CB-BH01_1.5-1.7	May 19, 2025		Soil	S25-My0061152						X	X					
4	CB-BH01_3.0.3.2	May 19, 2025		Soil	S25-My0061153		X										
5	CB-BH02_0.5-0.95	May 19, 2025		Soil	S25-My0061154	X					X					X	
6	CB-BH02_2.5-2.95	May 19, 2025		Soil	S25-My0061155		X										
7	CB-BH03_0.5-0.95	May 19, 2025		Soil	S25-My0061156	X					X	X					
8	CB-SS01_0.05-0.1	May 19, 2025		Soil	S25-My0061157	X					X					X	



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

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Sydney
NSW 2000

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Project ID: 12657833

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Phone: 02 9239 7100
Fax: 02 9239 7199

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Eurofins Analytical Services Manager : Adam Bateup

Sample Detail						Asbestos - AS4964	HOLD*	Split - External Lab*	Polycyclic Aromatic Hydrocarbons	Metals M8	Moisture Set	Eurofins Suite B7	Eurofins Suite B7 (filtered metals)	BTEXN and Volatile TRH	BTEXN and Volatile TRH	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8
Melbourne Laboratory - NATA # 1261 Site # 1254																	
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X	X	X	X	X	X	X	X	X
9	QC401	May 19, 2025		Water	S25-My0061158								X				
10	QC403	May 19, 2025		Soil	S25-My0061159				X	X	X						
11	TB401_250519	May 12, 2025		Trip Blank (solid)	S25-My0061160									X			
12	TS401_250519	May 12, 2025		Trip Spike (solid)	S25-My0061161										X		
13	RB401	May 19, 2025		Water	S25-My0061162				X	X							
14	RB402	May 19, 2025		Water	S25-My0061163				X	X							
15	MW1	May 19, 2025		Water	S25-My0061164												X
16	MW4	May 19, 2025		Water	S25-My0061165												X
17	MW6	May 19, 2025		Water	S25-My0061166												X
18	CB-BH03_2.5-2.95	May 19, 2025		Soil	S25-My0061167						X	X					
19	CB-BH02_0.9-1	May 19, 2025		Soil	S25-My0061168	X											
20	CB-BH02_7.9-8	May 19, 2025		Soil	S25-My0061169		X										



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Sample Detail						Asbestos - AS4964	HOLD*	Split - External Lab*	Polycyclic Aromatic Hydrocarbons	Metals M8	Moisture Set	Eurofins Suite B7	Eurofins Suite B7 (filtered metals)	BTEXN and Volatile TRH	BTEXN and Volatile TRH	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8	Suite B10B:TRH/BTEXN/PAH/OC/POPP/PCB/M8
Melbourne Laboratory - NATA # 1261 Site # 1254																	
Sydney Laboratory - NATA # 1261 Site # 18217						X	X		X	X	X	X	X	X	X	X	X
21	QC402	May 19, 2025		Soil	S25-My0061170			X									
22	QC404	May 19, 2025		Soil	S25-My0061171			X									
23	CB_BH02_1-1.45	May 19, 2025		Soil	S25-My0061172		X										
Test Counts						6	4	2	3	3	7	3	1	1	1	3	3

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

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

QC - Acceptance Criteria

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

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
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	
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	
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	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1,2,3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cadmium	mg/L	< 0.0002			0.0002	Pass	
Chromium	mg/L	< 0.001			0.001	Pass	
Copper	mg/L	< 0.001			0.001	Pass	
Lead	mg/L	< 0.001			0.001	Pass	
Mercury	mg/L	< 0.0001			0.0001	Pass	
Nickel	mg/L	< 0.001			0.001	Pass	
Zinc	mg/L	< 0.005			0.005	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/L	< 0.002			0.002	Pass	
4.4'-DDD	mg/L	< 0.0002			0.0002	Pass	
4.4'-DDE	mg/L	< 0.0002			0.0002	Pass	
4.4'-DDT	mg/L	< 0.0002			0.0002	Pass	
a-HCH	mg/L	< 0.0002			0.0002	Pass	
Aldrin	mg/L	< 0.0002			0.0002	Pass	
b-HCH	mg/L	< 0.0002			0.0002	Pass	
d-HCH	mg/L	< 0.0002			0.0002	Pass	
Dieldrin	mg/L	< 0.0002			0.0002	Pass	
Endosulfan I	mg/L	< 0.0002			0.0002	Pass	
Endosulfan II	mg/L	< 0.0002			0.0002	Pass	
Endosulfan sulphate	mg/L	< 0.0002			0.0002	Pass	
Endrin	mg/L	< 0.0002			0.0002	Pass	
Endrin aldehyde	mg/L	< 0.0002			0.0002	Pass	
Endrin ketone	mg/L	< 0.0002			0.0002	Pass	
g-HCH (Lindane)	mg/L	< 0.0002			0.0002	Pass	
Heptachlor	mg/L	< 0.0002			0.0002	Pass	
Heptachlor epoxide	mg/L	< 0.0002			0.0002	Pass	
Hexachlorobenzene	mg/L	< 0.0002			0.0002	Pass	
Methoxychlor	mg/L	< 0.0002			0.0002	Pass	
Toxaphene	mg/L	< 0.005			0.005	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/L	< 0.002			0.002	Pass	
Bolstar	mg/L	< 0.002			0.002	Pass	
Chlorfenvinphos	mg/L	< 0.02			0.02	Pass	
Chlorpyrifos	mg/L	< 0.002			0.002	Pass	
Chlorpyrifos-methyl	mg/L	< 0.002			0.002	Pass	
Coumaphos	mg/L	< 0.02			0.02	Pass	
Demeton-S	mg/L	< 0.002			0.002	Pass	
Demeton-O	mg/L	< 0.002			0.002	Pass	
Diazinon	mg/L	< 0.002			0.002	Pass	
Dichlorvos	mg/L	< 0.002			0.002	Pass	
Dimethoate	mg/L	< 0.002			0.002	Pass	
Disulfoton	mg/L	< 0.002			0.002	Pass	
EPN	mg/L	< 0.002			0.002	Pass	
Ethion	mg/L	< 0.002			0.002	Pass	
Ethoprop	mg/L	< 0.002			0.002	Pass	
Ethyl parathion	mg/L	< 0.002			0.002	Pass	
Fenitrothion	mg/L	< 0.002			0.002	Pass	
Fensulfothion	mg/L	< 0.002			0.002	Pass	
Fenthion	mg/L	< 0.002			0.002	Pass	
Malathion	mg/L	< 0.002			0.002	Pass	
Merphos	mg/L	< 0.002			0.002	Pass	
Methyl parathion	mg/L	< 0.002			0.002	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mevinphos	mg/L	< 0.002			0.002	Pass	
Monocrotophos	mg/L	< 0.002			0.002	Pass	
Naled	mg/L	< 0.002			0.002	Pass	
Omethoate	mg/L	< 0.02			0.02	Pass	
Phorate	mg/L	< 0.002			0.002	Pass	
Pirimiphos-methyl	mg/L	< 0.02			0.02	Pass	
Pyrazophos	mg/L	< 0.002			0.002	Pass	
Ronnel	mg/L	< 0.002			0.002	Pass	
Terbufos	mg/L	< 0.002			0.002	Pass	
Tetrachlorvinphos	mg/L	< 0.002			0.002	Pass	
Tokuthion	mg/L	< 0.002			0.002	Pass	
Trichloronate	mg/L	< 0.002			0.002	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/L	< 0.005			0.005	Pass	
Aroclor-1221	mg/L	< 0.005			0.005	Pass	
Aroclor-1232	mg/L	< 0.005			0.005	Pass	
Aroclor-1242	mg/L	< 0.005			0.005	Pass	
Aroclor-1248	mg/L	< 0.005			0.005	Pass	
Aroclor-1254	mg/L	< 0.005			0.005	Pass	
Aroclor-1260	mg/L	< 0.005			0.005	Pass	
Total PCB*	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	78			70-130	Pass	
TRH C10-C14	%	79			70-130	Pass	
TRH C6-C10	%	71			70-130	Pass	
TRH >C10-C16	%	74			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	99			70-130	Pass	
Toluene	%	93			70-130	Pass	
Ethylbenzene	%	91			70-130	Pass	
m&p-Xylenes	%	90			70-130	Pass	
o-Xylene	%	90			70-130	Pass	
Xylenes - Total*	%	90			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	79			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	108			70-130	Pass	
Acenaphthylene	%	105			70-130	Pass	
Benzo(g,h,i)perylene	%	113			70-130	Pass	
Dibenz(a,h)anthracene	%	122			70-130	Pass	
Fluorene	%	119			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	129			70-130	Pass	
Naphthalene	%	81			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic (filtered)	%	96			80-120	Pass	
Cadmium (filtered)	%	99			80-120	Pass	
Chromium (filtered)	%	98			80-120	Pass	
Copper (filtered)	%	98			80-120	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead (filtered)	%	96			80-120	Pass	
Mercury (filtered)	%	103			80-120	Pass	
Nickel (filtered)	%	99			80-120	Pass	
Zinc (filtered)	%	96			80-120	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthylene	%	95			70-130	Pass	
Anthracene	%	106			70-130	Pass	
Benz(a)anthracene	%	94			70-130	Pass	
Benzo(a)pyrene	%	85			70-130	Pass	
Benzo(b&j)fluoranthene	%	103			70-130	Pass	
Benzo(g,h,i)perylene	%	95			70-130	Pass	
Benzo(k)fluoranthene	%	98			70-130	Pass	
Chrysene	%	84			70-130	Pass	
Dibenz(a,h)anthracene	%	96			70-130	Pass	
Fluoranthene	%	121			70-130	Pass	
Fluorene	%	115			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	92			70-130	Pass	
Phenanthrene	%	98			70-130	Pass	
Pyrene	%	117			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	94			80-120	Pass	
Cadmium	%	96			80-120	Pass	
Chromium	%	95			80-120	Pass	
Copper	%	93			80-120	Pass	
Lead	%	92			80-120	Pass	
Mercury	%	96			80-120	Pass	
Nickel	%	91			80-120	Pass	
Zinc	%	91			80-120	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	88			70-130	Pass	
4,4'-DDD	%	90			70-130	Pass	
4,4'-DDE	%	93			70-130	Pass	
4,4'-DDT	%	75			70-130	Pass	
α-HCH	%	82			70-130	Pass	
Aldrin	%	102			70-130	Pass	
β-HCH	%	106			70-130	Pass	
δ-HCH	%	126			70-130	Pass	
Dieldrin	%	95			70-130	Pass	
Endosulfan I	%	125			70-130	Pass	
Endosulfan II	%	128			70-130	Pass	
Endosulfan sulphate	%	78			70-130	Pass	
Endrin	%	107			70-130	Pass	
Endrin aldehyde	%	126			70-130	Pass	
Endrin ketone	%	86			70-130	Pass	
γ-HCH (Lindane)	%	70			70-130	Pass	
Heptachlor	%	94			70-130	Pass	
Heptachlor epoxide	%	83			70-130	Pass	
Hexachlorobenzene	%	83			70-130	Pass	
Methoxychlor	%	73			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Diazinon				%	121			70-130	Pass	
Dimethoate				%	74			70-130	Pass	
Ethion				%	72			70-130	Pass	
Fenitrothion				%	77			70-130	Pass	
Methyl parathion				%	90			70-130	Pass	
Mevinphos				%	112			70-130	Pass	
LCS - % Recovery										
Polychlorinated Biphenyls										
Aroclor-1016				%	93			70-130	Pass	
Aroclor-1260				%	99			70-130	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Total Recoverable Hydrocarbons					Result 1					
TRH C10-C14	R25-My0059659	NCP	%		75			70-130	Pass	
TRH >C10-C16	R25-My0059659	NCP	%		74			70-130	Pass	
Spike - % Recovery										
Heavy Metals					Result 1					
Arsenic (filtered)	S25-My0059864	NCP	%		103			75-125	Pass	
Cadmium (filtered)	S25-My0059864	NCP	%		98			75-125	Pass	
Chromium (filtered)	S25-My0059864	NCP	%		98			75-125	Pass	
Copper (filtered)	S25-My0059864	NCP	%		94			75-125	Pass	
Lead (filtered)	S25-My0059864	NCP	%		91			75-125	Pass	
Mercury (filtered)	S25-My0059864	NCP	%		100			75-125	Pass	
Nickel (filtered)	S25-My0059864	NCP	%		94			75-125	Pass	
Zinc (filtered)	S25-My0059864	NCP	%		95			75-125	Pass	
Spike - % Recovery										
Heavy Metals					Result 1					
Arsenic	S25-My0061793	NCP	%		90			75-125	Pass	
Cadmium	S25-My0061793	NCP	%		91			75-125	Pass	
Chromium	S25-My0061793	NCP	%		92			75-125	Pass	
Copper	S25-My0061793	NCP	%		90			75-125	Pass	
Lead	S25-My0061793	NCP	%		89			75-125	Pass	
Mercury	S25-My0061793	NCP	%		92			75-125	Pass	
Nickel	S25-My0061793	NCP	%		89			75-125	Pass	
Zinc	S25-My0061793	NCP	%		92			75-125	Pass	
Spike - % Recovery										
Polycyclic Aromatic Hydrocarbons					Result 1					
Acenaphthylene	S25-My0059511	NCP	%		80			70-130	Pass	
Anthracene	S25-My0059511	NCP	%		105			70-130	Pass	
Benz(a)anthracene	S25-My0059511	NCP	%		73			70-130	Pass	
Chrysene	S25-My0059511	NCP	%		85			70-130	Pass	
Fluorene	S25-My0059511	NCP	%		97			70-130	Pass	
Phenanthrene	S25-My0059511	NCP	%		105			70-130	Pass	
Spike - % Recovery										
Organochlorine Pesticides					Result 1					
b-HCH	S25-My0059511	NCP	%		104			70-130	Pass	
d-HCH	S25-My0059511	NCP	%		108			70-130	Pass	
Endosulfan II	S25-My0059511	NCP	%		70			70-130	Pass	
Heptachlor	S25-My0059511	NCP	%		79			70-130	Pass	
Hexachlorobenzene	S25-My0059511	NCP	%		76			70-130	Pass	
Methoxychlor	S25-My0059511	NCP	%		70			70-130	Pass	
Spike - % Recovery										
Organophosphorus Pesticides					Result 1					
Diazinon	S25-My0059511	NCP	%		77			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fenitrothion	S25-My0059511	NCP	%	82			70-130	Pass	
Methyl parathion	S25-My0059511	NCP	%	94			70-130	Pass	
Mevinphos	S25-My0059511	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S25-My0059511	NCP	%	72			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C6-C9	S25-My0073336	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S25-My0066544	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S25-My0066544	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S25-My0066544	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C6-C10	S25-My0073336	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH >C10-C16	S25-My0066544	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S25-My0066544	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S25-My0066544	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S25-My0073336	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S25-My0073336	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S25-My0073336	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S25-My0073336	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S25-My0073336	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total*	S25-My0073336	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S25-My0073336	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Acenaphthylene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Anthracene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benz(a)anthracene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(a)pyrene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(b&j)fluoranthene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(g,h,i)perylene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Benzo(k)fluoranthene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Chrysene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Dibenz(a,h)anthracene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluoranthene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Fluorene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Naphthalene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Phenanthrene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Pyrene	S25-My0066708	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic (filtered)	N25-My0055697	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium (filtered)	N25-My0055697	NCP	mg/L	0.0004	0.0004	6.0	30%	Pass	
Chromium (filtered)	N25-My0055697	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper (filtered)	N25-My0055697	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead (filtered)	N25-My0055697	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury (filtered)	N25-My0055697	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Nickel (filtered)	N25-My0055697	NCP	mg/L	0.045	0.045	<1	30%	Pass
Zinc (filtered)	N25-My0055697	NCP	mg/L	0.53	0.52	2.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S25-My0061162	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	S25-My0061162	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	S25-My0061162	CP	mg/L	< 0.001	0.001	10	30%	Pass
Copper	S25-My0061162	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead	S25-My0061162	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury	S25-My0061162	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	S25-My0061162	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	S25-My0061162	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S25-My0061163	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cadmium	S25-My0061163	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium	S25-My0061163	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper	S25-My0061163	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Lead	S25-My0061163	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Mercury	S25-My0061163	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel	S25-My0061163	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Zinc	S25-My0061163	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass

Comments

Report 1222552-W-V2 (amendment to report 1222552-W) has been issued with corrected sample ID from CB-BH03A_00.5-0.1 to CB-SS01_0.05-0.1 as per client email 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

Qualifier Codes/Comments

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

Authorised by:

Adam Bateup	Analytical Services Manager
Mickael Ros	Senior Analyst-Metal
Raymond Siu	Senior Analyst-Volatile
Roopesh Rangarajan	Senior Analyst-Organic



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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Sample Receipt Advice

Company name: GHD Pty Ltd NSW
Contact name: Andrew Duval
Project name: NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH
Project ID: 12657833
Turnaround time: 5 Day
Date/Time received: Jun 2, 2025 11:15 AM
Eurofins reference: 1226899

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of chilled sample on the batch as recorded by Eurofins Sample Receipt : 8.1 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- N/A Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

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

Adam Bateup on phone : or by email: Adam.Bateup@eurofinsanz.com

Results will be delivered electronically via email to Andrew Duval - andrew.duval@ghd.com.

Note: A copy of these results will also be delivered to the general GHD Pty Ltd NSW email address.

GHD Pty Ltd NSW
Level 15, 133 Castlereagh Street
Sydney
NSW 2000



NATA Accredited
Accreditation Number 1261
Site Number 20794 & 2780

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

Attention: **Andrew Duval**

Report **1226899-S-V2**
Project name **NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH**
Project ID **12657833**
Received Date **Jun 02, 2025**

Client Sample ID			CB-BH03A_1.0	CB-BH03A_2.0	CB-BH03A_3.0	CB-BH03A_4.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N25-Jn0001053	N25-Jn0001054	N25-Jn0001055	N25-Jn0001056
Date Sampled			May 29, 2025	May 29, 2025	May 29, 2025	May 29, 2025
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	7.3	6.7	7.5	7.6
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	3.5	2.7	3.9	4.4
Reaction Ratings* ^{S05}	0	comment	1.0	1.0	1.0	1.0
Chromium Suite						
pH-KCL (NLM-3.1)	0.1	pH Units	7.0	5.3	6.3	-
Titratable Actual Acidity (NLM-3.2)	2	mol H+/t	< 2	12	< 2	-
Titratable Actual Acidity (NLM-3.2)	0.003	% pyrite S	< 0.003	0.020	< 0.003	-
Chromium Reducible Sulfur (s-SCR) (NLM-2.1) ^{S04}	0.005	% S	0.010	0.008	0.025	-
Chromium Reducible Sulfur (a-SCR) (NLM-2.1)	3	mol H+/t	6.1	5.0	16	-
Sulfur - KCl Extractable	0.005	% S	N/A	N/A	N/A	-
HCl Extractable Sulfur Correction Factor	1	factor	2.0	2.0	2.0	-
HCl Extractable Sulfur	0.005	% S	N/A	N/A	N/A	-
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	N/A	N/A	N/A	-
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	N/A	N/A	N/A	-
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.005	% S	N/A	N/A	N/A	-
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO ₃	0.45	N/A	N/A	-
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	90	N/A	N/A	-
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	0.14	N/A	N/A	-
ANC Fineness Factor		factor	1.5	1.5	1.5	-
s-CRS Suite - Net Acidity - NASSG (including ANC)	0.02	% S	< 0.02	0.03	0.03	-
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	< 10	17	16	-
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO ₃ /t	< 1	1.3	1.2	-
Extraneous Material						
<2mm Fraction	0.005	g	31	31	35	-
>2mm Fraction	0.005	g	< 0.005	< 0.005	< 0.005	-
Analysed Material	0.1	%	100	100	100	-
Extraneous Material	0.1	%	< 0.1	< 0.1	< 0.1	-
Sample Properties						
% Moisture	1	%	12	14	16	16

Client Sample ID			CB-BH03A_5.0	CB-BH03A_6.0	CB-BH03A_7.0	CB-BH03A_8.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			N25-Jn0001057	N25-Jn0001058	N25-Jn0001059	N25-Jn0001060
Date Sampled			May 29, 2025	May 29, 2025	May 29, 2025	May 29, 2025
Test/Reference	LOR	Unit				
Acid Sulfate Soils Field pH Test						
pH-F (Field pH test)*	0.1	pH Units	7.3	7.2	7.4	7.3
pH-FOX (Field pH Peroxide test)*	0.1	pH Units	4.5	3.9	4.2	3.9
Reaction Ratings ^{S05}	0	comment	1.0	1.0	1.0	1.0
Chromium Suite						
pH-KCL (NLM-3.1)	0.1	pH Units	-	6.0	-	5.9
Titrateable Actual Acidity (NLM-3.2)	2	mol H+/t	-	4.0	-	3.0
Titrateable Actual Acidity (NLM-3.2)	0.003	% pyrite S	-	0.010	-	< 0.003
Chromium Reducible Sulfur (s-SCR) (NLM-2.1) ^{S04}	0.005	% S	-	0.041	-	0.026
Chromium Reducible Sulfur (a-SCR) (NLM-2.1)	3	mol H+/t	-	25	-	16
Sulfur - KCl Extractable	0.005	% S	-	N/A	-	N/A
HCl Extractable Sulfur Correction Factor	1	factor	-	2.0	-	2.0
HCl Extractable Sulfur	0.005	% S	-	N/A	-	N/A
Net Acid soluble sulfur (SNAS) NLM-4.1	0.005	% S	-	N/A	-	N/A
Net Acid soluble sulfur (a-SNAS) NLM-4.1	2	mol H+/t	-	N/A	-	N/A
Net Acid soluble sulfur (s-SNAS) NLM-4.1 ^{S02}	0.005	% S	-	N/A	-	N/A
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	0.01	% CaCO3	-	N/A	-	N/A
Acid Neutralising Capacity - (a-ANCbt) (NLM-5.2)	2	mol H+/t	-	N/A	-	N/A
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2) ^{S03}	0.02	% S	-	N/A	-	N/A
ANC Fineness Factor		factor	-	1.5	-	1.5
s-CRS Suite - Net Acidity - NASSG (including ANC)	0.02	% S	-	0.05	-	0.03
CRS Suite - Net Acidity - NASSG (Including ANC)	10	mol H+/t	-	29	-	19
CRS Suite - Liming Rate - NASSG (Including ANC) ^{S01}	1	kg CaCO3/t	-	2.2	-	1.4
Extraneous Material						
<2mm Fraction	0.005	g	-	25	-	36
>2mm Fraction	0.005	g	-	< 0.005	-	< 0.005
Analysed Material	0.1	%	-	100	-	100
Extraneous Material	0.1	%	-	< 0.1	-	< 0.1
Sample Properties						
% Moisture	1	%	18	21	19	18

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Acid Sulfate Soils Field pH Test	Sydney	Jun 04, 2025	7 Days
- Method: LTM-GEN-7060 Determination of field pH (pHF) and field pH peroxide (pHFOX) tests			
Chromium Reducible Sulfur Suite			
Chromium Suite	Brisbane	Jun 11, 2025	6 Week
- Method: LTM-GEN-7070 Chromium Reducible Sulfur (SCR) in Soil			
Extraneous Material	Brisbane	Jun 11, 2025	6 Week
- Method: LTM-GEN-7050/7070			
% Moisture	Sydney	Jun 02, 2025	14 Days
- Method: LTM-GEN-7080 Moisture			



web: www.eurofins.com.au
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ABN: 50 005 085 521

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 +61 7 3902 4600 NATA# 1261 Site# 20794 & 2780	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079
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ABN: 91 05 0159 898

Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370 & 2554
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NZBN: 9429046024954

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

Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Project Name: NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH

Project ID: 12657833

Order No.:

Report #: 1226899

Phone: 02 9239 7100

Fax: 02 9239 7199

Received: Jun 2, 2025 11:15 AM

Due: Jun 17, 2025

Priority: 5 Day

Contact Name: Andrew Duval

Eurofins Analytical Services Manager : Adam Bateup

Sample Detail						Acid Sulfate Soils Field pH Test	Chromium Reducible Sulfur Suite	Moisture Set
Sydney Laboratory - NATA # 1261 Site # 18217						X		X
Brisbane Laboratory - NATA # 1261 Site # 20794 & 2780							X	
External Laboratory								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID			
1	CB-BH03A_1.0	May 29, 2025		Soil	N25-Jn0001053	X	X	X
2	CB-BH03A_2.0	May 29, 2025		Soil	N25-Jn0001054	X	X	X
3	CB-BH03A_3.0	May 29, 2025		Soil	N25-Jn0001055	X	X	X
4	CB-BH03A_4.0	May 29, 2025		Soil	N25-Jn0001056	X		X
5	CB-BH03A_5.0	May 29, 2025		Soil	N25-Jn0001057	X		X
6	CB-BH03A_6.0	May 29, 2025		Soil	N25-Jn0001058	X	X	X
7	CB-BH03A_7.0	May 29, 2025		Soil	N25-Jn0001059	X		X
8	CB-BH03A_8.0	May 29, 2025		Soil	N25-Jn0001060	X	X	X



web: www.eurofins.com.au
email: EnviroSales@eurofinsanz.com

ABN: 50 005 085 521

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

ABN: 91 05 0159 898

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

NZBN: 9429046024954

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

Company Name: GHD Pty Ltd NSW
Address: Level 15, 133 Castlereagh Street
Sydney
NSW 2000

Order No.:
Report #: 1226899
Phone: 02 9239 7100
Fax: 02 9239 7199

Received: Jun 2, 2025 11:15 AM
Due: Jun 17, 2025
Priority: 5 Day
Contact Name: Andrew Duval

Project Name: NSW AMBULANCE INFRASTRUCTURE - CAVES BEACH
Project ID: 12657833

Eurofins Analytical Services Manager : Adam Bateup

Sample Detail	Acid Sulfate Soils Field pH Test	Chromium Reducible Sulfur Suite	Moisture Set
Sydney Laboratory - NATA # 1261 Site # 18217	X		X
Brisbane Laboratory - NATA # 1261 Site # 20794 & 2780		X	
Test Counts	8	5	8

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

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

Units

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

Terms

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

QC - Acceptance Criteria

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

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

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

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

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

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

QC Data General Comments

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

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery										
Chromium Suite										
pH-KCL (NLM-3.1)				%	102			80-120	Pass	
Titratable Actual Acidity (NLM-3.2)				%	100			80-120	Pass	
Chromium Reducible Sulfur (s-SCR) (NLM-2.1)				%	103			80-120	Pass	
Test	Lab Sample ID	QA Source		Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
Chromium Suite					Result 1	Result 2	RPD			
pH-KCL (NLM-3.1)	N25-Jn0001055	CP	pH Units		6.3	6.3	<1	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	N25-Jn0001055	CP	mol H+/t		< 2	< 2	<1	20%	Pass	
Titratable Actual Acidity (NLM-3.2)	N25-Jn0001055	CP	% pyrite S		< 0.003	< 0.003	<1	30%	Pass	
Chromium Reducible Sulfur (s-SCR) (NLM-2.1)	N25-Jn0001055	CP	% S		0.025	0.025	2.0	20%	Pass	
Chromium Reducible Sulfur (a-SCR) (NLM-2.1)	N25-Jn0001055	CP	mol H+/t		16	15	2.0	30%	Pass	
Sulfur - KCl Extractable	N25-Jn0001055	CP	% S		N/A	N/A	N/A	30%	Pass	
HCl Extractable Sulfur	N25-Jn0001055	CP	% S		N/A	N/A	N/A	20%	Pass	
Net Acid soluble sulfur (SNAS) NLM-4.1	N25-Jn0001055	CP	% S		N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (a-SNAS) NLM-4.1	N25-Jn0001055	CP	mol H+/t		N/A	N/A	N/A	30%	Pass	
Net Acid soluble sulfur (s-SNAS) NLM-4.1	N25-Jn0001055	CP	% S		N/A	N/A	N/A	30%	Pass	
Acid Neutralising Capacity - (ANCbt) (NLM-5.2)	N25-Jn0001055	CP	% CaCO3		N/A	N/A	N/A	20%	Pass	
Acid Neutralising Capacity - (s-ANCbt) (NLM-5.2)	N25-Jn0001055	CP	% S		N/A	N/A	N/A	30%	Pass	
ANC Fineness Factor	N25-Jn0001055	CP	factor		1.5	1.5	<1	30%	Pass	
s-CRS Suite - Net Acidity - NASSG (including ANC)	N25-Jn0001055	CP	% S		0.03	0.02	2.0	30%	Pass	
CRS Suite - Net Acidity - NASSG (Including ANC)	N25-Jn0001055	CP	mol H+/t		16	15	2.0	30%	Pass	
CRS Suite - Liming Rate - NASSG (Including ANC)	N25-Jn0001055	CP	kg CaCO3/t		1.2	1.2	2.0	30%	Pass	
Duplicate										
Sample Properties					Result 1	Result 2	RPD			
% Moisture	N25-Jn0001056	CP	%		16	16	1.0	30%	Pass	
Duplicate										
Acid Sulfate Soils Field pH Test					Result 1	Result 2	RPD			
pH-F (Field pH test)*	N25-Jn0001059	CP	pH Units		7.4	7.3	pass	20%	Pass	
pH-FOX (Field pH Peroxide test)*	N25-Jn0001059	CP	pH Units		4.2	4.2	pass	30%	Pass	

Comments

Report 1226899-S-V2 (amendment to report 1226899-S) has been issued to include CRS as per client email 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	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
S01	Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO ₃) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m ³ in-situ soil' multiply 'reported results' x 'wet bulk density of soil in t/m ³ '
S02	Retained Acidity is Reported when the pHKCl is less than pH 4.5
S03	Acid Neutralising Capacity is only required if the pHKCl is greater than or equal to pH 6.5
S04	Acid Sulfate Soil Samples have a 24 hour holding time unless frozen or dried within that period
S05	Field Screen uses the following fizz rating to classify the rate the samples reacted to the peroxide: 1.0; No reaction to slight. 2.0; Moderate reaction. 3.0; Strong reaction with persistent froth. 4.0; Extreme reaction.

Authorised by:

Adam Bateup	Analytical Services Manager
Dilani Samarakoon	Senior Analyst-SPOCAS
Jonathon Angell	Senior Analyst-SPOCAS
Ryan Phillips	Senior Analyst-Sample Properties



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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CHAIN OF CUSTODY RECORD

Page ____ of ____

[illegible]

Environmental Division
Sydney

Work Order Reference

Work Order Reference
ES2515149



Telephone : + 61-2-8784 8555

rec: Form of 22/5/22 12:30



Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial Sg = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2515149**

Client : **GHD PTY LTD**
Contact : **MS CARMEN YI**
Address : **LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000**

Laboratory : **Environmental Division Sydney**
Contact : **Samiksha Sathish**
Address : **277-289 Woodpark Road Smithfield
NSW Australia 2164**

E-mail : **carmen.yi@ghd.com**
Telephone : **+61 0451 962 988**
Facsimile : **----**

E-mail : **samiksha.sathish@alsglobal.com**
Telephone : **+61-2-8784 8555**
Facsimile : **+61-2-8784 8500**

Project : **12657833**
Order number : **12657833**
C-O-C number : **----**
Site :
Sampler : **ANDREW DUVAL**

Page : **1 of 3**
Quote number : **EB2020GHDSE0038 (EN/000)**
QC Level : **NEPM 2013 B3 & ALS QC Standard**

Dates

Date Samples Received : **22-May-2025 12:30**
Client Requested Due : **28-May-2025**
Date

Issue Date : **23-May-2025**
Scheduled Reporting Date : **28-May-2025**

Delivery Details

Mode of Delivery : **Carrier**
No. of coolers/boxes : **1**

Security Seal : **Intact.**
Temperature : **12.1'C, 11.8'C - Ice Bricks
present**

Receipt Detail :
No. of samples received / analysed : **2 / 2**

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP075 SIM PAH only SIM - PAH only	SOIL - S-02 8 Metals (incl. Digestion)
ES2515149-002	19-May-2025 00:00	QC404	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - W-26 TRH/BTEXN/PAH/8 Metals
ES2515149-001	19-May-2025 00:00	QC402	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)

Email accountspayableAU@ghd.com

Accounts Payable Australia

- A4 - AU Tax Invoice (INV)

Email accountspayableAU@ghd.com

ANDREW DUVAL

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for ESdat (ESRN_ESDAT)

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CARMEN YI

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- A4 - AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for ESdat (ESRN_ESDAT)

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EMILY SMITH

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- Chain of Custody (CoC) (COC)
- EDI Format - ESDAT (ESDAT)
- EDI Format - XTab (XTAB)
- Electronic SRN for ESdat (ESRN_ESDAT)

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GHD LAB REPORTS

- *AU Certificate of Analysis - NATA (COA)
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)
- EDI Format - ESDAT (ESDAT)
- Electronic SRN for ESdat (ESRN_ESDAT)

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CERTIFICATE OF ANALYSIS

Work Order : **ES2515149**
Client : **GHD PTY LTD**
Contact : **MS CARMEN YI**
Address : **LEVEL 15, 133 CASTLEREAGH STREET**
SYDNEY NSW, AUSTRALIA 2000
Telephone : **+61 0451 962 988**
Project : **12657833**
Order number : **12657833**
C-O-C number : **----**
Sampler : **ANDREW DUVAL**
Site :
Quote number : **EN/000**
No. of samples received : **2**
No. of samples analysed : **2**

Page : **1 of 8**
Laboratory : **Environmental Division Sydney**
Contact : **Samiksha Sathish**
Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**
Telephone : **+61-2-8784 8555**
Date Samples Received : **22-May-2025 12:30**
Date Analysis Commenced : **23-May-2025**
Issue Date : **28-May-2025 10:19**



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.

- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a,h)anthracene (1.0), Benzo(g,h,i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC404	----	----	----	----
Sampling date / time					19-May-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2515149-002	-----	-----	-----	-----
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		16.0	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		5	----	----	----	----
Copper	7440-50-8	5	mg/kg		<5	----	----	----	----
Lead	7439-92-1	5	mg/kg		<5	----	----	----	----
Nickel	7440-02-0	2	mg/kg		2	----	----	----	----
Zinc	7440-66-6	5	mg/kg		<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC404	----	----	----	----
				Sampling date / time	19-May-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2515149-002	-----	-----	-----	-----
				Result	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		88.0	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		84.7	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		86.5	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		95.5	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		94.8	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		93.6	----	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				QC402	----	----	----	----
Sampling date / time				19-May-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2515149-001	-----	-----	-----	-----
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.179	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	0.009	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	-----	0.5	µg/L	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC402	----	----	----	----
Sampling date / time					19-May-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2515149-001	-----	-----	-----	-----
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (zero)	-----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	-----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	-----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	-----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	-----	50	µg/L		<50	----	----	----	----
^ C10 - C36 Fraction (sum)	-----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	----	----	----	----
>C10 - C16 Fraction	-----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	-----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	-----	100	µg/L		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	-----	100	µg/L		<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	-----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ Total Xylenes	-----	2	µg/L		<2	----	----	----	----
^ Sum of BTEX	-----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1.0	%		21.9	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC402	----	----	----	----
Sampling date / time					19-May-2025 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2515149-001	-----	-----	-----	-----
				Result		----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
2-Chlorophenol-D4	93951-73-6	1.0	%		52.5	----	----	----	----
2,4,6-Tribromophenol	118-79-6	1.0	%		46.6	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1.0	%		72.1	----	----	----	----
Anthracene-d10	1719-06-8	1.0	%		79.9	----	----	----	----
4-Terphenyl-d14	1718-51-0	1.0	%		89.0	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		101	----	----	----	----
Toluene-D8	2037-26-5	2	%		111	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		104	----	----	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2515149	Page	: 1 of 7
Client	: GHD PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MS CARMEN YI	Telephone	: +61-2-8784 8555
Project	: 12657833	Date Samples Received	: 22-May-2025
Site	:	Issue Date	: 28-May-2025
Sampler	: ANDREW DUVAL	No. of samples received	: 2
Order number	: 12657833	No. of samples analysed	: 2

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, where applicable to the methodology, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type		Count		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)						
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)						
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055) QC404	19-May-2025	----	----	----	26-May-2025	02-Jun-2025	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T) QC404	19-May-2025	26-May-2025	15-Nov-2025	✓	27-May-2025	15-Nov-2025	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T) QC404	19-May-2025	26-May-2025	16-Jun-2025	✓	27-May-2025	16-Jun-2025	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM)) QC404	19-May-2025	26-May-2025	02-Jun-2025	✓	26-May-2025	05-Jul-2025	✓

Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) QC402	19-May-2025	----	----	----	27-May-2025	15-Nov-2025	✔
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) QC402	19-May-2025	----	----	----	27-May-2025	16-Jun-2025	✔



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC402	19-May-2025	23-May-2025	26-May-2025	✓	24-May-2025	02-Jul-2025	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) QC402	19-May-2025	23-May-2025	26-May-2025	✓	26-May-2025	02-Jul-2025	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC402	19-May-2025	23-May-2025	02-Jun-2025	✓	24-May-2025	02-Jun-2025	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) QC402	19-May-2025	23-May-2025	26-May-2025	✓	26-May-2025	02-Jul-2025	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC402	19-May-2025	23-May-2025	02-Jun-2025	✓	24-May-2025	02-Jun-2025	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC402	19-May-2025	23-May-2025	02-Jun-2025	✓	24-May-2025	02-Jun-2025	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Dissolved Mercury by FIMS	EG035F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	14	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification .

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions



<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.



QUALITY CONTROL REPORT

Work Order : **ES2515149**

Page : 1 of 8

Client : **GHD PTY LTD**

Contact : **MS CARMEN YI**

Address : **LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW, AUSTRALIA 2000**

Telephone : **+61 0451 962 988**

Project : **12657833**

Order number : **12657833**

C-O-C number : **----**

Sampler : **ANDREW DUVAL**

Site :

Quote number : **EN/000**

No. of samples received : **2**

No. of samples analysed : **2**

Laboratory : **Environmental Division Sydney**

Contact : **Samiksha Sathish**

Address : **277-289 Woodpark Road Smithfield NSW Australia 2164**

Telephone : **+61-2-8784 8555**

Date Samples Received : **22-May-2025**

Date Analysis Commenced : **23-May-2025**

Issue Date : **28-May-2025**



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	Position	Accreditation Category
Dian Dao	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot

CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

RPD = Relative Percentage Difference

= Indicates failed QC

* = The final LOR has been raised due to dilution or other sample specific cause; adjusted LOR is shown in brackets. The duplicate ranges for Acceptable RPD% are applied to the final LOR where applicable.

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 6602288)									
ES2515149-002	QC404	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	6	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	2	2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
ES2515330-004	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	12	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	34	33	0.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	44	46	5.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	72	70	4.1	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	75	68	9.4	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 6602291)									
ES2515149-002	QC404	EA055: Moisture Content	----	0.1 (1.0)*	%	16.0	15.8	1.5	0% - 50%
ES2515336-004	Anonymous	EA055: Moisture Content	----	0.1 (1.0)*	%	33.3	33.6	0.8	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6602284)									
ES2515330-004	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2515072-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 6598316)									
ES2515167-001	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6603891)									
ES2514831-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001 (0.0010)*	mg/L	<0.0010	<0.0010	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001 (0.010) *	mg/L	0.029	0.029	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001 (0.010) *	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001 (0.010) *	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001 (0.010) *	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001 (0.010) *	mg/L	<0.010	<0.010	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005 (0.050) *	mg/L	<0.050	<0.050	0.0	No Limit
ES2515202-006	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6603891) - continued									
ES2515202-006	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.049	0.048	0.0	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 6603892)									
ES2514832-002	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2515202-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6597852)									
EN2508500-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EN2508500-005	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6597852)									
EN2508500-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EN2508500-005	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 6597852)									
EN2508500-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
EN2508500-005	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6602288)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	99.0	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	83.1	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	110	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	100	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	97.4	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	94.6	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	89.7	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6602284)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	89.6	70.0	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6598316)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	98.8	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	97.1	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	98.9	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	98.4	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	100	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	100	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	98.0	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	101	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	92.6	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	98.1	75.0	127
EP075(SIM): Benzo(b+)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	93.3	68.0	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	98.7	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	93.7	70.0	126
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	94.4	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	95.8	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	95.2	63.0	121

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: <i>Compound</i>	CAS Number	LOR	Unit	Result				
EG020F: Dissolved Metals by ICP-MS (QCLot: 6603891)								

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 6603891) - continued								
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	98.1	85.0	114
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.3	84.0	110
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	98.8	85.0	111
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.2	81.0	111
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	96.9	83.0	111
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.6	82.0	112
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	96.7	81.0	117
EG035F: Dissolved Mercury by FIMS (QCLot: 6603892)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	99.2	83.0	105
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6597851)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	73.4	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	67.4	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	71.3	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	69.0	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	81.5	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	66.5	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	69.8	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	77.7	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	68.3	64.1	117
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	67.9	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	74.8	61.7	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	72.8	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	91.2	63.3	117
EP075(SIM): Indeno(1,2,3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	89.7	59.9	118
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	90.7	61.2	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	87.6	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6597850)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	78.4	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	89.4	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	93.2	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6597852)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	84.7	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6597850)								



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6597850) - continued								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	77.2	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	93.7	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	73.6	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6597852)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	86.3	75.0	127
EP080: BTEXN (QCLot: 6597852)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	93.3	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	92.8	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.7	73.8	122
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	10 µg/L	95.8	73.0	122
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	96.5	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	114	75.5	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 6602288)							
ES2515149-002	QC404	EG005T: Arsenic	7440-38-2	50 mg/kg	95.9	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.1	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	96.7	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	98.1	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	97.4	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	96.8	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	97.2	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6602284)							
ES2515072-002	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	85.2	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 6598316)							
ES2515167-001	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	101	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	104	70.0	130

Sub-Matrix: **WATER**

Matrix Spike (MS) Report		
Spike	Spike Recovery(%)	Acceptable Limits (%)



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 6603891)							
ES2514832-001	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	96.3	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	97.9	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	83.5	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	96.9	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	96.9	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	98.6	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	102	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 6603892)							
ES2514832-001	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	91.9	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6597852)							
EN2508500-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	91.6	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6597852)							
EN2508500-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	89.8	70.0	130
EP080: BTEXN (QCLot: 6597852)							
EN2508500-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	88.4	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	90.0	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	97.2	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	92.7	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	97.0	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	110	70.0	130



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