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HANNAS CONTRACTING SERVICES PTY LTD

Detailed Site Investigation

101-105 Old Pittwater Road, Brookvale NSW

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EXECUTIVE SUMMARY

EI Australia (EI) was engaged by Hannas Contracting Services Pty Ltd ('the client') to conduct a Detailed Site Investigation (DSI) for the property located at 101-105 Old Pittwater Road, Brookvale NSW ('the site').

The site is located within the local government area of Northern Beaches Council. It comprises four cadastral allotments, identified as Lots 1 to 4 in Deposited Plan (DP) 402645, and covers an area of approximately 4,211 m^2. At the time of the investigation, the site was occupied by commercial properties.

The purpose of this investigation was to determine the environmental conditions (contamination status) of the site, in support of a development application to Northern Beaches Council. This DSI enables the developer to meet obligations under the *State Environmental Planning Policy* (Resilience and Hazards) (2021) (formerly SEPP 55 – Remediation of Land), for the assessment and management of contaminated soil and/or groundwater, should these be identified.

The site redevelopment will involve the demolition of existing structures, followed by the construction of a multi-storey industrial warehouse with strata storage units, overlying a single level basement.

This DSI follows on from a previous (preliminary) investigation completed for the site by JK Environments (JKE), entitled:

- JKE (2022) *Report to Hannas Contracting Services Pty Ltd on Preliminary (Stage 1) Site Investigation for Proposed Industrial Development at 101-105 Old Pittwater Road, Brookvale NSW* (Ref. E34695PRrpt, dated 9 March 2022).

The scope of works for this DSI included intrusive soil and groundwater sampling, in accordance with the following rationale:

- Sampling of fill and natural soils from seven borehole locations across accessible parts of the site, to characterise *in situ* soils;
- Completion of a single groundwater monitoring event (GME) comprising three newly installed monitoring wells, to characterise local groundwater conditions; and
- Laboratory analysis of representative soil and groundwater samples for the chemicals of potential concern.

Findings

The key findings of this DSI were as follows:

- The site consists of a number of warehouse buildings and small commercial / industrial units. Current commercial activities identified on the site include a marble and stone worker warehouse and associated showrooms, a kayak retailer, a retail display manufacturer, a landscaping business, a pipe repairer, a retail research and a virtual design company.
- There were no evidences of underground petroleum storage systems (UPSS), underground storage tanks (UST), or above-ground storage tank (AST) present on the site.
- The subsurface conditions were generalised as a layer of filling (to the depths of up to 3.0 mBGL), overlying natural sand / clay soils.
- Contaminant concentrations in representative soil samples were found to be generally below the adopted human health and ecological criteria applicable to commercial / industrial land use settings, with the following exceptions:

  - Friable and bonded asbestos were detected in shallow fill at BH7 (depths 0.1-0.2 mBGL); and
  - Asbestos was also identified in fill soils at two previous locations investigated by JKE (2022), being JKE_BH6 (depths 0.13-0.35 mBGL) and JKE_BH7 (depths 0.2-0.6 mBGL).
- Screening for volatile organic compounds (VOC) in soil headspace samples was conducted using a pre-calibrated PID. VOC concentrations from collected soil samples were low (<1 ppm).
- Depth to water in the groundwater monitoring wells (GW-BH1 to GW-BH3) was recorded between 2.43 and 4.20 mBGL. Groundwater flow direction was inferred to be north-easterly, towards Brookvale Creek (170m east from the site).
- Contaminant concentrations in groundwater were generally compliant with the adopted criteria, with the following exceptions:
  - Priority metals (copper and zinc) were detected in groundwater at levels marginally above the adopted criteria. However, these detected concentrations are consistent with the local disturbed urban background conditions and unlikely to be associated with site-specific impacts.
  - TRH-F1 concentrations above the laboratory practical quantitation limit (PQL) were detected at GW-BH1 (170 µg/L), while TRH-F2 concentrations above the PQL were detected at GW-BH3 (72 µg/L).
  - Chlorinated volatile organic compounds (CVOCs) were only detected in groundwater at GW-BH1. The detected contaminants included perchloroethylene (PCE) and its breakdown products cis-1,2-dichloroethene (cis-DCE) and Trichloroethylene (TCE).

    PCE is an industrial solvent used for dry cleaning and textile processing. The source of these elevated concentrations is likely associated with potential migration of contaminations from the neighbouring property, which was noted to be a potential active laundry located up-gradient of well GW-BH1.

Based on the findings obtained from this DSI, and with consideration of EI's *Statement of Limitations* (**Section 11**), EI concludes that:

- There are localised areas of impacted soils (asbestos) above the adopted human health criteria that potentially pose human health risks;
- TRHs and chlorinated VOCs are present in groundwater at GW-BH1. As the proposed basement is expected to intercept groundwater, a risk assessment must be conducted to inform the design of protection measures to be implemented during and after the building construction. These protection measures will protect future receptors from any potential risks posed by these contaminants via direct contact (construction and future intrusive workers) or vapour intrusion (future users of the basement); and
- The site can be made suitable for the potential future site development, provided the recommendations detailed in **Section 10** are implemented.

1. INTRODUCTION

1.1 Background and Purpose

EI Australia (EI) was engaged by Hannas Contracting Services Pty Ltd ('the client') to conduct a Detailed Site Investigation (DSI) of the land parcel located at 101-105 Old Pittwater Road, Brookvale NSW (herein referred to as the 'the site').

The site is located 13 km north-east of the Sydney central business district (CBD), within the local government area (LGA) of Northern Beaches Council, as shown in **Figure 1**, **Appendix A**. The site comprises four cadastral allotments, identified as Lots 1 to 4 in Deposited Plan (DP) 402645, and covers an area of approximately 4,211 m^2, as depicted in **Figure 2**, **Appendix A**. At the time of the investigation, the site was occupied by commercial properties.

The purpose of this investigation was to determine the environmental conditions (contamination status) of the site, in support of a development application to Northern Beaches Council. This DSI enables the developer to meet obligations under the *State Environmental Planning Policy* (Resilience and Hazards) (2021) (formerly SEPP 55 – Remediation of Land), for the assessment and management of contaminated soil and/or groundwater, should these be identified. It follows on from a previous (preliminary) investigation completed for the site by JK Environments (JKE), entitled:

- JKE (2022) *Report to Hannas Contracting Services Pty Ltd on Preliminary (Stage 1) Site Investigation for Proposed Industrial Development at 101-105 Old Pittwater Road, Brookvale NSW* (Ref. E34695PRrpt, dated 9 March 2022).

1.2 Proposed Development

Based on the supplied plans (**Appendix C**), the site redevelopment will involve the demolition of existing structures, followed by the construction of a multi-storey industrial warehouse with strata storage units, overlying a single level basement.

The basement will be constructed covering most of the site area, with a finished floor level (FFL) of 9.6 metres Australian Height Datum (mAHD). Locally deeper excavations might be required for footings, lift overrun pits, crane pads and service trenches. Limited set-back areas are proposed along the western site boundary.

1.3 Regulatory Framework

The following regulatory framework and guidelines were considered during this DSI:

- *Contaminated Land Management Act 1997* (the CLM Act 1997);
- *Protection of the Environment Operations Act 1997* (the POEO Act 1997);
- *Environmental Planning and Assessment Act 1979* (the EP&A Act 1979);
- *State Environmental Planning Policy (Resilience and Hazards) (2021)* (formerly SEPP 55 – Remediation of Land);
- *Warringah Local Environmental Plan 2011;*
- NSW EPA (1995) *Sampling Design Guidelines;*
- NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme;*
- NSW EPA (2020) *Consultants Reporting on Contaminated Land: Contaminated Land Guidelines*; and

- NEPC (2013) *Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater* and *Schedule B(2) Guideline on Site Characterisation,* in the *National Environmental Protection (Assessment of Site Contamination) Amendment Measure 1999.*

1.4 Project Objectives

The objectives of this investigation were to:

- Evaluate the potential for site contamination on the basis of historical land uses, anecdotal and documentary evidence;
- Assess the degree of soil and groundwater contamination (if present), by means of intrusive sampling and laboratory analysis for the relevant contaminants of potential concern (COPCs);
- Provide a conclusion regarding suitability of the site for the proposed use; and
- Make recommendations for the appropriate management of any impacted soils and/or groundwater, should site contamination be confirmed.

1.5 Scope of Works

To achieve the above objectives, the following scope of works was completed:

Desktop Study

- A review of relevant (hydro)geological and soil landscape maps for the project area; and
- A review of the previous environmental report (JKE, 2022).

Fieldwork and Laboratory Analysis

- A review of existing underground services on-site, utilising *Dial-Before-You-Dig* plans and electro-magnetic equipment operated by a licensed services locator;
- A site walkover inspection;
- Construction of test boreholes at seven locations (BH1 to BH7), distributed in a generally triangular grid pattern across accessible parts of the site;
- Conversion of three of the test boreholes into groundwater monitoring bores (BH1 to BH3);
- Multiple level soil sampling within fill and natural soils at each of the test bores;
- Completion of one groundwater monitoring event (GME), including measurement of standing water levels (SWLs) and representative sampling at the newly installed wells; and
- Laboratory analysis of selected soil and groundwater samples for relevant analytical parameters, as determined by the desktop study and field observations.

Data Analysis and Reporting

This DSI report documents all desk study findings, the conceptual site model, data quality objectives, investigation methodologies and results. It also provides a record of observations made during the site walkover inspection, borehole and monitoring well construction logs and a discussion of laboratory analytical results in regards to potential risks to human health, the environment and the aesthetic condition of the land.

2. SITE DESCRIPTION

2.1 Property Identification, Location and Physical Setting

The site identification details and associated information are presented in **Table 2-1**. The site locality and assessment area are illustrated in **Figures 1** and **2**, **Appendix A**.

Table 2-1 Site Identification

Attribute	Description
Street Address	101-105 Old Pittwater Road, Brookvale NSW
Location Description	13 km north-east of Sydney CBD, bound by Old Pittwater Road to the west and commercial / industrial properties in all other directions.
Site Coordinates	Northern-eastern corner of site (GDA2020-MGA56): ▪ Easting: 339153.405; ▪ Northing: 6262493.237. (Source: http://maps.six.nsw.gov.au)
Site Area	4,211 m^2 (**Appendix C**)
Lots and DP	Lots 1 to 4 in DP 402645
State Survey Marks	Three state survey marks and one permanent mark are situated within close proximity (<100m) to the site: ▪ SS19744: on Old Pittwater Road (approx. 25m south); and ▪ SS19748D, SS36915 and PM1502D: on Old Pittwater Road (approx. 80m northwest). (Source: http://maps.six.nsw.gov.au)
LGA	Northern Beaches Council
Parish	Manly Cove
County	Cumberland
Current Zoning	IN1: General Industrial (*Warringah Local Environmental Plan 2011*)

2.2 Local Land Use

The site is situated within a predominantly commercial / industrial area, as described in **Table 2-2**. The local sensitive receptors within close proximity to the site are also identified in this table.

Table 2-2 Local Land Use

Direction	Land Use Description	Sensitive Receptor (and distance from site)
North	Commercial / industrial properties Only About Children Brookvale	Childcare (immediately adjacent)
South	Commercial / industrial properties Explore & Develop Brookvale / Warringah Mall Child Care Centre	Childcare (approximately 100m southwest & 185m southeast)
East	Commercial / industrial properties	-
West	Commercial / industrial properties	-

2.3 Regional Setting

The topography, (hydro)geology and soil landscape information are summarised in **Table 2-3**.

Table 2-3 Regional Setting

Attribute	Description
Topography	The site slopes down to the east, with elevations ranging from approximately 15.7-16.0 mAHD along the western site boundary to approximately 12.7-13.0 mAHD along the eastern site boundary (refer to survey plan attached in **Appendix C**).
Site Drainage	Likely to be consistent with the general slope of the site. Stormwater is expected to be collected in stormwater pits to the east and piped to the municipal collection system.
Regional Geology	The Department of Mineral Resources *Sydney 1:100,000 Geological Series Sheet 9130* (DMR, 1983) indicates the site is underlain by Hawkesbury Sandstone (*Rh*), consisting of medium to coarse-grained quartz sandstone, very minor shale and laminite lenses.
Soil Landscape	The Soil Conservation Service of NSW *Soil Landscapes of the Sydney 1:100,000 Sheet* (Chapman and Murphy, 1989) indicates that the site overlies a Disturbed Terrain (*xx*) landscape. This landscape is characterised by level plain to hummocky terrain, extensively disturbed by human activity, including complete disturbance, removal or burial of soil. Landfill includes soil, rock, building and waste materials. Original vegetation is completely cleared, replaced with turf or grassland. Turfed areas are commonly capped with up to 40-60cm of sandy loam or compacted clay, over fill or waste materials.
Acid Sulfate Soil (ASS) Risk	With reference to the *Sydney Heads Acid Sulfate Soil Risk Map* (1:25,000 scale; Murphy, 1997), the site lies within the class description of '*No Known Occurrence*'. In such cases, ASSs are not known or expected to occur and "land management activities are not likely to be affected by ASS materials." The site is not mapped as containing ASS on the *Warringah Local Environmental Plan 2011 Acid Sulfate Soil Maps*. Based on this information, the potential for ASS to be present on-site was considered to be low and further assessments were deemed unwarranted.
Nearest Surface Water Feature	Brookvale Creek, approximately 170m east of the site, which flows in a southeast direction into Manly Creek, then ultimately Manly Beach.
Groundwater Bore Records and Groundwater Flow Direction	A search of WaterNSW was conducted during the previous investigation (JKE, 2022), revealing five registered bores within a 500m radius of the site. The nearest four registered bores were all authorized for monitoring use only. Groundwater flow direction in the area was inferred to be in an easterly direction, towards Brookvale Creek.

2.4 Site Walkover Inspection

Observations were recorded during a walkover inspection of the site conducted on 21 May 2022. These observations are summarised below and photographs taken during the inspection are presented in **Appendix D**. A detailed description of the site and earlier use was provided by JKE (2022) and summarised in **Section 3**.

- The site is a rectangular shaped block of land, consisting of a number of warehouse buildings and small commercial / industrial units. Unbuilt parts of the site were sealed with brick / concrete pavements.
  - Current commercial activities identified on the site include a marble and stone worker warehouse and associated showrooms, a kayak retailer, a retail display manufacturer, a landscaping business, a pipe repairer, a retail research and a virtual design company.
  - Building structures were observed to be generally in fair to good condition. Fibre cement sheeting (FCS) containing potential asbestos-containing materials (ACM) was observed in the building structures.

  - Brick pavers were located in the west of the site, used for car parking. The remainder of the site was sealed with concrete pavement for driveways and outdoor storage. The pavements were generally in poor condition, with major cracks.
  - Skip bins were found to be adjacent to the stone masonry within the central portion of the site on the hardstand area. Waste materials, including timber, plastic and stone, were observed. No staining was noted.
  - Limited accessible soils are only present within the garden beds at the western and eastern boundaries of the site. The vegetation did not appear to be distressed. Some waste materials, including PCV pipes, tiles, plastic and potential fibre cement sheeting were present on the soil surface along the western site boundary.
  - A chain meshed fence was found to be delineating the eastern site boundary and a stormwater drain was noted.
- No obvious (i.e. visible or olfactory) signs of contamination were observed during the inspection of the site.
- There were no evidences of underground petroleum storage systems (UPSS), underground storage tanks (UST), or above-ground storage tank (AST) present on the site.
- According to anecdotal information gathered during the site visit, a fire has historically occurred at the rear of the warehouse building, in the southern portion of the site.
- The neighbouring properties south of the site (up gradient of groundwater well GW-BH1), comprised multiple commercial-industrial tenancies, including a potential active laundry (unable to confirm status as it was closed during the walkover) and a unit involved with metalworking / paint activities.

3. PREVIOUS INVESTIGATION

A previous (preliminary) investigation had been completed for the site by JKE, which was documented under the following report:

- JKE (2022) *Report to Hannas Contracting Services Pty Ltd on Preliminary (Stage 1) Site Investigation for Proposed Industrial Development at 101-105 Old Pittwater Road, Brookvale NSW* (Ref. E34695PRrpt, dated 9 March 2022).

A summary of the key findings of this report is provided in **Table 3-1**.

Table 3-1 Summary of the Previous Investigation

Project Task	Findings
Aims	The primary aims of the investigation were to identify any past or present potentially contaminating activities at the site, identify the potential for site contamination, and make a preliminary assessment of soil and groundwater contamination conditions.
Scope of Works	The scope of the investigation included a review of site information, a site walkover inspection and soil sampling from four boreholes (BH4 to BH7).
Findings	At the time of site inspection on 22 January 2022, the site was occupied by warehouses/offices buildings and smaller commercial/industrial units. The current and recent tenancies included a marble and stone worker warehouse and associated showrooms; a kayak retailer (Epic Kayaks); a retail display manufacturer (The Efficiency Group); a landscaping business (Formed Gardens); a pipe repairer (RSM lining Supplies); and a retail research and virtual design company (Store Lab). The site was historically used for agricultural purposes, and then developed for commercial/industrial uses since the 1950s, which were likely associated with paint production, rubber and plastic production, metal and iron work, protective coatings, and furniture repairs. Surrounding properties were industrial/commercial properties since the 1950s, including the manufacture of bituminous tar products, paints, oils/lubricants and insecticide products, commercial printing, panel beating and boat building/repairs, and ferrous and non-ferrous foundries. Council records identified that development consents were granted for the installation of a petrol pump and USTs at a property adjacent to the north of the site and a building fire was recorded in 1992 for this property. Intrusive investigations identified that the sub-surface conditions of the site could be generalised as a layer of filling (to depths of 0.5-1.0 mBGL), overlying natural sand. The fill typically comprised silty and gravelly sand, with inclusions of igneous and sandstone gravels, ash, slag and building rubble (brick and glass fragments). A fragment of FCS was identified in shallow fill soils in BH7. No visible or olfactory signs of contamination were noted during the inspection. Groundwater seepage was not encountered during drilling to a maximum borehole depth of 3 mBGL. A search of SafeWork NSW database recorded the presence of 2 Depots. Depot 1 (Flammable) contained 500L liquefied petroleum gas (LPG) tank and 1,000L acetylene tank. Depot 2 (Compressed Non-Flammable) contained a 53.4L Argoshield cylinder and a 18.6L oxygen cylinder. JKE noted that the dangerous goods stored on-site were considered to not represent potential sources of site contamination. The site was not listed on any NSW EPA records. Four neighbouring properties were listed in the Records under the Duty to Report Contamination under Section 60 of the CLM Act 1997, including Warringah Mall and a petroleum product manufacturer adjacent to the east of the site, a dry cleaner business approx. 180m to the south of the site (cross-gradient), and a bus depot approx. 570m to the east of the site (down-gradient). JKE concluded that due to the distances and cross/down-gradient locations, these

Project Task	Findings
	properties were not considered to represent potential sources of site contamination. Two current licences under the POEO Act 1997 were also identified at the neighbouring properties, one related to the production of petroleum products and fuel production at a property adjacent to the east of the site, and the other related to the storage and recovery of paper wastes at a property 180m to the north (cross-gradient) of the site. JKE noted that the petroleum products and fuel production at the property adjacent to the east of the site was considered to represent a potential source of contamination due to the proximity to the site. JKE also noted that the paper waste storage/recovery facility was not considered to represent a potential source of site contamination. The conceptual site model established that there was a potential contamination risk for the site, associated with imported fill materials, historical agricultural use, application of pesticides, hazardous building materials, industrial use of the site, and off-site migration from neighbouring properties. Contamination concentrations at the selected fill and natural soils were assessed against NEPM (2013) thresholds for commercial/industrial land use settings. The results were generally below the adopted criteria, with the exception of zinc concentration in fill at BH7 exceeded the ecological criteria, and asbestos was identified in fill at BH6 and BH7.
Conclusion and Recommendations	Based on the above findings, JKE concluded that the site could be made suitable for the proposed development, subject to the recommendations as follows: - Undertake a DSI to fully characterise the soils and groundwater at the site; - Prepare a Remediation Action Plan (RAP) to address the contamination issues identified at the site. Due to the presence of asbestos, an appropriate asbestos management plan (AMP) must be prepared and implemented for the current site operations and for the demolition/construction phase of the proposed development to meet the requirements under Clause 429 of the Work Health and Safety Regulation 2017 (NSW).

4. CONCEPTUAL SITE MODEL

In accordance with NEPC (2013) *Schedule B2 – Guideline on Site Characterisation*, EI developed a conceptual site model (CSM) that assessed plausible linkages between potential contamination sources, migration pathways and receptors. The CSM also provides a framework for identifying data gaps in the existing site characterisation.

4.1 Summary of Site History

A review of the previous PSI (JKE, 2022) indicated that the site was historically used for agricultural purposes, and then developed for commercial / industrial uses since the 1950s, which were likely associated with paint, rubber and plastic production, metal and iron work, protective coatings, and furniture repairs. Building structures on the site were constructed in the late 1950s, with a couple of renovations observed since that time. According to anecdotal information gathered during the site visit, a fire has historically occurred at the rear of the warehouse building in the southern portion of the site.

Surrounding properties were also used for agricultural purposes until the 1950s and then developed for commercial/industrial uses.

4.2 Potential Contamination Sources

The potential contamination sources were as follows:

- Imported fill materials of unknown origin and quality, used to grade and level the site;
- Hazardous building materials (including potential ACM, lead-based paint) present within the site structures;
- Application of pesticides around building (footing) perimeters;
- Historical agricultural use of the site;
- Industrial use of the site (including paint production, rubber and plastic production, metal and iron work, protective coatings, and furniture repairs);
- Contamination associated with historical fire damage onsite;
- Leaks from vehicles in the car parking and driveway areas; and
- Off-site migration from neighbouring commercial properties.

4.3 Emerging Contaminants

Per- and Poly- Fluoroalkyl Substances (PFAS)

NSW EPA (2017) requires that PFAS are considered when investigating land contamination. The probability of PFAS occurrence, which was based on considerations outlined in the *PFAS National Environmental Management Plan* (HEPA, 2020), is reviewed in **Table 4-1**. In this instance, the potential for PFAS to be present on-site was deemed moderate to high.

Table 4-1 PFAS Decision Tree

Preliminary Screening	Probability of Occurrence[1]
Has an activity listed in HEPA (2020) [2] as being associated with PFAS contamination occurred on-site? If so, list activity: *Paint production; rubber and plastic production; metal and iron work; protective coatings; and furniture repairs.*	**M**

Preliminary Screening	Probability of Occurrence[1]
Has an activity listed in HEPA (2020) [2] as being associated with PFAS contamination occurred up-gradient or adjacent to the site? If so, list activity: *A range of industrial activities was historically present up-gradient/adjacent from the site.*	**M**
Did fire training involving the use of suppressants occur on-site between 1970 and 2010? *According to anecdotal information gathered during the site visit, a fire has historically occurred at the rear of the warehouse building on the southern portion of the site. Although not a 'training event', fire suppressants were likely used.*	**H**
Did fire training occur up-gradient or adjacent to the site between 1970 and 2010? [3]	L
Have "fuel" fires ever occurred on-site between 1970 and 2010? (e.g. ignition of fuel (solvent, petrol, diesel, kero) tanks?) *One property adjacent to the north was historically damaged by fire during the 1990s.*	**M**
Have PFAS been used in manufacturing or stored on-site? [4]	L
Could PFAS have been imported to the site in fill materials from a site with an activity listed in HEPA (2020)?	L
Could PFAS-contaminated groundwater or run-off have migrated on to the site?	**M**
Is the site or adjacent sites listed in the NSW EPA PFAS Investigation Program? [5]	L
If the probability is medium or high in any of the rows, does the site analytical suite need to be optimised to include preliminary sampling and testing for PFAS in soil (including ASLP testing) and waters?	**Yes**

Note 1 Probability: L – low (all necessary documentation has been reviewed and there is no recorded instance or compelling rationale); M – moderate (all necessary documentation has been reviewed and there is potential evidence of a recorded instance with compelling rationale); H – high (all necessary documentation has been reviewed and there is evidence of a recorded instance with compelling rationale).
Note 2 Activities listed in Appendix B of HEPA (2020).
Note 3 Runoff from up-gradient PFAS use may impact surface water, soil, sediment and groundwater.
Note 4 PFAS is used wide range of industrial processes and consumer products, including in the manufacture of non-stick cookware, specialised garments and textiles, Scotchguard™ and similar products (used to protect fabric, furniture, leather and carpets from oils and stains), metal plating and in some types of fire-fighting foam. (https://www.nicnas.gov.au/chemical-information/factsheets/chemical-name/perfluorinated-chemicals-pfas)
Note 5 Refer to https://www.epa.nsw.gov.au/your-environment/contaminated-land/pfas-investigation-program.

Emerging Chemicals

The NSW EPA uses Chemical Control Orders (CCOs) as a primary legislative tool under the *Environmentally Hazardous Chemicals Act 1985*, to control chemicals of concern and limit their potential impact on the environment. Considerations for chemicals controlled by CCOs, and other potential emerging chemicals, are outlined in **Table 4-2**. In this instance, the potential for an emerging chemical of concern to be present on-site was deemed low, with the possible use of pesticides before the 1950s and later, in imported fill and near surface soil.

Table 4-2 Emerging or Controlled Chemicals

Chemicals of Concern (CCO or emerging)	Decision
Were aluminium smelter wastes used or stored on site (CCO, 1986)?	No
Do dioxin contaminated wastes (CCO, 1986) have the potential to impact the site? [1]	No
Were organotin products (CCO, 1989) used or stored on site? [2]	No
Were polychlorinated biphenyls (PCBs) used or PCB wastes (CCO, 1997) stored on-site? [3]	No
Were scheduled chemical or wastes (CCO, 2004) used or stored? [4]	Possibility for pesticides used before the 1950s, later applied to footings

Chemicals of Concern (CCO or emerging)	Decision
	for termite control and/or present in imported fill
Are other emerging chemicals suspected? [5]	No
If Yes to any questions, has site sampling suite been optimised to include sampling for these chemicals of concern?	Yes

Note 1 From burning of certain chemicals, smelting or chemical manufacturing or fire on or near the site.
Note 2 From anti-fouling paints used or removed at boat and ship yards and marinas.
Note 3 From older transformer oils and electrical capacitors
Note 4 Twenty-four mostly organochlorine pesticides and industrial by-products
Note 5 Other chemicals considered as emerging (e.g. 1,4 dioxane; associated with some CVOC).

4.4 Potential Contaminants

The primary contaminants of potential concern (COPCs) at the site were considered to be:

- Priority Metals (PM) - arsenic, cadmium, chromium, copper, lead, mercury, nickel & zinc;
- Volatile Organic Compounds (VOC), including:
  - Total Recoverable Hydrocarbons (TRH);
  - Benzene, Toluene, Ethylbenzene and Xylenes (BTEX); and
  - Chlorinated Volatile Organic Compounds (CVOC);
- Polycyclic Aromatic Hydrocarbons (PAH);
- Organochlorine and Organophosphorus Pesticides (OCP / OPP);
- Polychlorinated Biphenyls (PCB);
- Asbestos;
- Per-and Poly- Fluoroalkyl Substances (PFAS); and
- Phenols.

4.5 Risk Assessment

An assessment of the potential contamination risks for the site is outlined in **Table 4-3**.

Table 4-3 Assessment of Potential Contamination Risk

Potential Source	Impacted Medium	COPC	Risk of Contamination
Importation of fill of unknown origin and quality	Shallow soil	PM, TRH, BTEX, PAH, OCP, OPP, PCB and asbestos	**Moderate** Asbestos was identified at two previous locations during the PSI by JKE (2022).
Hazardous building materials	Building fabrics Near surface soil	PM (lead in particular), PCB and asbestos	**Moderate** FCS was observed in the building structures during the site visit. Note that a hazardous materials survey has been completed by JKE following the PSI.
Application of pesticides	Near surface soil (building footing areas)	PM (arsenic and copper), OCP, OPP	**Low** If present, pesticides are expected to be limited to shallow, building footprint soils.
Historical agriculture use of the site before 1950	Shallow soil	PM, TRH, PAH, OCP, OPP	**Low** If present, pesticides are expected to be limited to shallow soils
Industrial use of the site / historical fire	Soil and	PM, TRH, VOC (including BTEX	**Moderate to High**

Potential Source	Impacted Medium	COPC	Risk of Contamination
damage	groundwater	and CVOC), PAH, PFAS and phenols	A range of industrial / commercial activities was identified on the site (**Section 4.1**). A fire has historically occurred at the rear of the warehouse building in the southern portion of the site.
Leakage from vehicles	Shallow soil	TRH and BTEX	**Low** Contamination (if present) is likely to be localised and restricted to shallow soils.
Migration from off-site sources	Soil Groundwater	PM, TRH, VOC (including BTEX and CVOC), PAH, PFAS and phenols	**Moderate** A range of industrial / commercial activities was identified around the site. One property adjacent to the north was historically damaged by fire during the 1990s.

4.6 Exposure Pathways and Receptors

The following potential receptors of site contamination were identified:

- Current and future site users;
- Demolition and construction workers;
- Occupants / Users of the adjacent land during construction;
- Future intrusive workers; and
- Brookvale Creek.

Given the qualitative risk assessment summarised in **Section 4.5**, the risks to these receptors were considered to be moderate to high. Refer to **Table 4-4** for an overview of the CSM.

4.7 Data Gaps

Based on the CSM derived for the site and the qualitative assessment of risks, the degree (presence / extent) of impacts associated with the identified contamination sources constituted an investigation data gap, which was largely closed by this DSI. The following data gaps, however, still remain:

- Delineation of the vertical and lateral extent of detected soil impacts (asbestos) at various locations as detailed in **Section 8.2**; and
- Soil vapour characterisation assessment at depths comprising the vadose zone immediately below the future basement slab.

Table 4-4 Conceptual Site Model

Potential Source	Impacted Media	Contaminants of Potential Concern	Transport mechanism	Exposure pathway	Potential receptor
Imported fill of unknown origin and quality Hazardous building materials Application of pesticides	Soil	PM, TRH, VOC (including BTEX and CVOC), PAH, OCP, OPP, PCB, asbestos, phenols and PFAS	Disturbance of surface and subsurface soils during site redevelopment, future site maintenance and future use of the site post redevelopment.	Ingestion Dermal contact Inhalation of particulates Inhalation of vapours	Current and future site users Demolition / construction workers Adjacent site users Future intrusive workers
			Volatilisation of contamination from soil and diffusion to indoor air spaces.	Inhalation of vapours	Current and future site users Adjacent site users
Historical agriculture use Industrial use of the site Fire damage Leakage from vehicles Off-site migration from upgradient sources	Groundwater	Dissolved PM, TRH, VOC (including BTEX and CVOC), PAH, phenols and PFAS	Volatilisation of contamination from groundwater to indoor air spaces (onsite and offsite)	Inhalation of vapours	Current and future site users Adjacent site users
			Disturbance of surface and subsurface soils during site redevelopment, future site maintenance and future use of the site post redevelopment.	Ingestion Dermal contact Inhalation of vapours	Demolition / construction workers Future intrusive workers
			Migration of dissolved phase impacts in groundwater via diffusion and natural advection	Biota uptake	Brookvale Creek (approx. 170m east of the site)

5. METHODOLOGY

5.1 Sampling and Analysis Quality Plan (SAQP)

The SAQP ensures that the data collected during environmental works are representative and provide a robust basis for assessment decisions. The SAQP for this DSI included the following:

- Data quality objectives (DQO), including a summary of the objectives of the DSI;
- Investigation methodology, including the media to be sampled, details of analytes and parameters to be monitored and a description of intended sampling points;
- Sampling procedures (including sample handling, preservation and storage);
- Field screening methods;
- Laboratory analysis methods; and
- Analytical quality assurance / quality control (QA/QC).

5.2 Data Quality Objectives

In accordance with the NEPC (2013) *Schedule B2 Guideline on Site Characterisation*, the USEPA (2006) *Data Quality Assessment* and NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme*, data quality objectives (DQO) were developed by the EI investigation team, following the NEPM- / NSW EPA- endorsed, seven step process (**Table 5-1**). In doing so, the appropriate levels of data quantity and quality needed for the specific requirements of the project were established.

Table 5-1 Summary of Project Data Quality Objectives

DQO Step	Details
1. State the Problem Summarise the contamination problem that will require new environmental data, and identify the resources available to resolve the problem; develop a conceptual site model.	Site redevelopment involves the demolition of existing structures, followed by the construction of a multi-storey industrial warehouse with strata storage units, overlying a single level basement (**Section 1.2**). The basement will be constructed covering the most extent of the site boundaries. Limited set-back areas are proposed along the western site boundary. Based on the proposed land use, the site will be assessed against the NEPC (2013) setting of commercial / industrial sites. The previous PSI (JKE, 2022) identified the potential for soil and/or groundwater contamination due to various possible sources, as listed in **Section 4.2**. A CSM has been developed (**Table 4-4**). The findings of the DSI must provide supportive information on the environmental condition of the site, to determine suitability for the proposed redevelopment.
2. Identify the Goal of the Study (Identify the decisions) Identify the decisions that need to be made on the contamination problem and the new environmental data required to make them.	Based on the objectives outlined in **Section 1.4**, the decisions that need to be made were: ▪ Has the nature, extent and source of any soil and/or groundwater impacts onsite been defined? ▪ What impact do the site specific, geologic and hydrogeological conditions have on the fate and transport of any impacts that may be identified? ▪ Does the level of impact coupled with the fate and transport of identified contaminants represent an unacceptable risk to identified human and/or environmental receptors on or offsite? ▪ Does the collected data provide sufficient information to allow the suitability of the site to be determined, or selection and design of an appropriate remedial strategy, if necessary? ▪ If the data does not provide sufficient information, what data gaps require closure to enable the suitability of the site to be determined, or selection and design of an appropriate remedial strategy?
3. Identify Information Inputs (Identify inputs to decision) Identify the information needed to support any decision and specify which inputs require new environmental measurements.	Inputs to the decision making process included: ▪ The proposed development and land use; ▪ Review of previous PSI (JKE, 2022); ▪ National and NSW EPA guidelines made or approved under the *NSW Contaminated Land Management Act 1997*; ▪ Observations during / from soil and groundwater sampling; and ▪ Laboratory analytical results for the selected soil and groundwater samples. At completion of the DSI, a decision is required regarding the suitability of the site for the proposed redevelopment, or if additional investigation is required to confirm that the site is suitable for that development or if remediation is required to make the site suitable.
4. Define the Boundaries of the Study Specify the spatial and temporal aspects of the environmental media that the data must represent to support decision.	Lateral – The proposed development area, as shown on **Figure 2**, **Appendix A**; Vertical – Investigations were advanced to the depth of natural soils or rock; Temporal – The results were valid for the day samples were collected and remain so as long as no changes occur in regards to site use, and contamination (if present) does not migrate onto the site from off-site sources.

DQO Step	Details
5. Develop the Analytic Approach (Develop a decision rule) To define the parameter of interest, specify the action level, and integrate previous DQO outputs into a single statement that describes a logical basis for choosing from alternative actions.	The decision rules for the investigation were: ▪ If the concentrations of contaminants in the soil and/or groundwater data exceed the adopted criteria, then assess the need to further investigate the extent of impacts onsite. ▪ Decision criteria for QA/QC measures are defined by the Data Quality Indicators (DQI) in **Table 5-2**.
6. Specify Performance or Acceptance Criteria (Specify limits on decision errors) Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data.	Specific limits for this project were in accordance with National and NSW EPA guidance, and appropriate indicators of data quality and standard procedures for field sampling and handling. This included the following points to quantify tolerable limits: ▪ The null hypothesis for the investigation was that the 95% Upper Confidence Limits (UCL) of the average concentration of contaminants of concern exceed relevant commercial/industrial soil land use criteria across the site. ▪ Acceptance of site suitability was based on the probability that: ‣ The 95% UCL of the average concentration of the data set satisfied the given site criteria (thus, a limit on the decision error was 5% that a conclusive statement may be incorrect); ‣ The standard deviation of the data set was less than 50% of the relevant criteria; and ‣ No single result exceeded the criteria by 250% or more. ▪ Soil and groundwater concentrations for the potential chemicals that were below investigation criteria made or approved by the NSW EPA were treated as acceptable and indicative of suitability for the proposed land use(s). ▪ If contaminant concentrations exceeded the adopted criteria, further investigation was considered prudent. If no contamination was detected, no further action was required.
7. Develop the Detailed Plan for Obtaining Data (Optimise the design for obtaining data) Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs.	In order to identify the most resource-effective sampling and analysis design and satisfy the DQOs: ▪ Soil sampling was conducted at 7 locations using a generally systematic grid pattern across accessible parts of the site, in accordance with the minimum number points recommended under the NSW EPA (1995) S*ampling Design Guidelines*. ▪ Field screening of soil for potential VOCs was carried out with a portable Photo-Ionisation Detector (PID). ▪ An upper soil profile sample was collected at each borehole location and tested for the COPC, to assess the conditions of the fill layer, and impacts from activities at ground level. ▪ Further discrete, natural samples were analysed for primary metals, TRH, BTEX and PAH. Samples were selected on field observations (including visual and olfactory evidence), giving consideration to the subsurface stratigraphy. ▪ Three groundwater monitoring wells were installed and gauged to assess groundwater quality at the site. ▪ A GME was completed, with laboratory analysis of representative samples for COPCs. ▪ Review of the results was undertaken to determine if further sampling was warranted.

5.3 Data Quality Indicators

To ensure that the investigation data were of an acceptable quality, they were assessed against the quality indicators outlined in **Table 5-2**. Assessment of data quality is presented in **Section 6** and **Appendix I**.

Table 5-2 Data Quality Indicators

QA/QC Component	Data Quality Indicator(s)
Precision A quantitative measure of the variability (or reproducibility) of data	Data precision was assessed by reviewing the performance of blind field duplicate sample sets, through calculation of relative percentage differences (RPD). Data precision was deemed acceptable if RPDs were found to be less than 30%. RPDs that exceeded this range were considered acceptable where: ▪ Results were less than 10 times the limits of reporting (LOR); ▪ Results were less than 20 times the LOR and the RPD was less than 50%; or ▪ Heterogeneous materials or volatile compounds were encountered.
Accuracy A quantitative measure of the closeness of reported data to the "true" value	Data accuracy was assessed through the analysis of: ▪ Split field duplicate sample sets; ▪ Field and method blanks, analysed for the analytes targeted in the primary samples; ▪ Matrix spike sample sets; and ▪ Laboratory control samples.
Representativeness The confidence (expressed qualitatively) that data are representative of each medium present onsite	To ensure the data produced by the laboratory were representative of conditions encountered in the field, the following measures were taken: ▪ Blank samples run in parallel with field samples, to confirm there were no unacceptable instances of laboratory artefacts; ▪ Review of relative percentage differences (RPD) values for field and laboratory duplicates to provide an indication that the samples were generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities; and ▪ The appropriateness of collection methodologies, handling, storage, and preservation techniques was assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (i.e. volatile loss during transport due to incorrect preservation / transport methods).
Completeness A measure of the amount of useable data from a data collection activity	Analytical data sets acquired during the DSI were evaluated as complete upon confirmation that: ▪ Standard operating procedures (SOPs) for sampling protocols were adhered to; and ▪ Copies of all chain of custody (COC) documentation were included and found to be properly completed. It could therefore be considered whether the proportion of "useable data" generated in the data collection activities was sufficient for the purposes of the land use assessment.
Comparability The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Data sets from separate sampling episodes were required and issues of comparability were reduced through adherence to SOPs and regulator-endorsed or published guidelines and standards on each data gathering activity. In addition, the data were collected by experienced samplers and NATA-accredited laboratory methodologies will be employed.

5.4 Sampling Rationale

With reference to the CSM described in **Section 4**, soil and groundwater sampling works were planned in accordance with the following rationale:

- Sampling of fill and natural soils from seven borehole locations across accessible parts of the site, to characterise *in situ* soils;
- Completion of a single groundwater monitoring event (GME) at three newly installed monitoring wells, to characterise local groundwater conditions; and
- Laboratory analysis of representative soil and groundwater samples for the COPCs.

5.5 Assessment Criteria

The assessment criteria adopted for this DSI are outlined in **Table 5-3**. These were selected from available published guidelines that are endorsed by national or state regulatory authorities, with due consideration of the exposure scenarios that are expected for various parts of the site, the likely exposure pathways, and the identified potential receptors.

For the purposes of this DSI, the adopted soil assessment criteria are referred to as the *Soil Investigation Levels* (SILs) and the adopted groundwater assessment criteria are referred to as *Groundwater Investigation Levels* (GILs).

Table 5-3 Adopted Investigation Levels for Soil and Groundwater

Medium	Guidelines	Rationale
Soil	NEPC (2013) HILs, HSLs and Management Limits for TRH	**Soil Health-based Investigation Levels (HILs)** NEPC (2013) *HIL-D* thresholds for commercial / industrial settings. **Soil Health-based Screening Levels (HSLs)** NEPC (2013) *HSL-D* thresholds for vapour intrusion at commercial and industrial sites were applied to assess potential human health impacts from residual vapours resulting from petroleum, BTEX and naphthalene, despite the future proposed residential use of the site, due to the proposed basement to be installed between the potential subsurface impacts and the receptors at ground level, as per Section 2.4.8, Schedule B1, NEPC (2013). **For asbestos:** ▪ No visible asbestos on soil surface in all areas of the site; ▪ HSL-D bonded ACM for all areas of the site; ▪ Friable Asbestos: 0.001% w/w in all areas of the site. **Ecological Investigation Levels (EILs) / Ecological Screening Levels (ESLs)** EILs / ESLs were considered relevant for any retained deep soils on the site. EILs / ESLs only apply to the top 2 m (root zone). The derived EIL criteria presented by EI are based on the addition of site specific Added Contaminant Limit (ACL) criteria and the Ambient Background Concentration (ABC) for a high traffic NSW suburb. The adopted ESL criteria presented by EI are based on coarse grained criteria. **Management Limits for Petroleum Hydrocarbons** Where the HSLs and ESLs for petroleum hydrocarbons were exceeded, sample results were also assessed against the NEPC (2013) *Management Limits* for the F1-F4 TRH fractions, to assess propensity for phase-separated hydrocarbons (PSH), fire and explosive hazards and adverse effects on buried infrastructure.
	CRC CARE (2017) High reliability	**High reliability ecological criteria for Benzo(a)pyrene** CRC Care's high reliability derived ecological guideline for

Medium	Guidelines	Rationale
	ecological criteria for Benzo(a)pyrene	benzo(a)pyrene in commercial and industrial sites was used to assess benzo(a)pyrene for protection of terrestrial ecosystems.
	HEPA (2020) PFAS	**Soil Investigation Levels for PFAS** The PFAS National Environmental Management Plan (NEMP) provides guideline values for PFAS compounds in soils. The values for industrial / commercial sites have been selected.
Groundwater	ANZG (2018) GILs for Fresh Waters and NEPC (2013) Groundwater HSLs	**Groundwater Investigation Levels (GILs) for Fresh Waters** ANZG (2018) provides GILs for typical, slightly-moderately disturbed aquatic ecosystems, Trigger Values (TVs) for the 95% level of protection of aquatic ecosystems; however, the 99% TVs were applied for the bio-accumulative analyte. **Health-based Screening Levels (HSLs)** The NEPC (2013) groundwater HSLs for vapour intrusion were used to assess potential human health impacts from residual vapours resulting from petroleum, BTEX and naphthalene impacts. The *HSL-D* thresholds for commercial and industrial settings were applied.
	HEPA (2020) PFAS Fresh Water	**Groundwater Investigation Levels for PFAS** The PFAS National Environmental Management Plan (NEMP) provides guideline values for PFAS compounds in aquatic ecosystems. The values for slightly-moderately disturbed aquatic ecosystems have been selected.
	NJDEP (2021)	New Jersey Department of Environmental Protection. These guidelines are recommended by the USEPA and by site auditors in NSW as screening criteria to cVOCs. 'Groundwater Screening Levels' were used.

5.6 Soil Sampling

The soil sampling works conducted at the site are described in **Table 5-4**. Sampling locations are illustrated in **Figure 2**, **Appendix A**.

Table 5-4 Summary of Soil Sampling Methodology

Activity/Item	Details
Fieldwork	Intrusive soil investigations were conducted on 21 and 28 May 2022, and comprised 7 borehole locations.
Investigation Method	Test bores BH4 to BH7 were advanced by a hand auger, while BH1 to BH3 were drilled using a drill rig, fitted with solid flight augers. Borehole details are presented in the detailed logs attached in **Appendix E**.
Soil Logging	Drilled soils were classified in the field with respect to lithological characteristics and evaluated on a qualitative basis for odour and visual signs of contamination. Soil classifications and descriptions were based on Australian Standard (AS) 1726-2017. Borehole logs are presented in **Appendix E**.
Soil Sampling	Soil samples were collected using a dry grab method (the sampler wearing unused, dedicated nitrile gloves) and placed into laboratory-supplied, acid-washed, solvent-rinsed glass jars, snap-lock, plastic bags or jars with a Teflon free lid. Blind and split field duplicates were separated from the primary samples and placed into dedicated glass jars. At each location, aliquots of soil were placed into separate zip-lock bags for laboratory asbestos analysis and in-field VOC screening by a PID.
Soil Vapour Screening	Screening for VOC in soil headspace samples was conducted using a pre-calibrated PID with a 10.6mV ionisation lamp.

Activity/Item	Details
Decontamination	Nitrile sampling gloves were replaced between each sampling location. Sampling equipment (i.e. auger) was scrubbed and washed with a mixture of Alconox and potable water (1/20) until free of all residual materials, then rinsed with laboratory-supplied, purified water.
Management of Soil Cuttings	Soil cuttings were used to backfill the completed boreholes.
Sample Preservation and Transport	Samples were stored in a chilled chest (with frozen ice packs), whilst on-site and in transit to the contracted laboratories. Soil samples were transported to SGS Australia Pty Ltd (SGS; the primary laboratory) and split (inter-laboratory) soil field duplicates were submitted to Envirolab Services Pty Ltd (Envirolab; the secondary laboratory) under strict chain-of-custody (COC) conditions. Signed COC certificates and sample receipt advice (SRA) were provided by SGS and Envirolab for confirmation purposes (**Appendix G**).
Laboratory Analysis and Quality Control	Soil samples were analysed by SGS and Envirolab for the COPC. In addition to the split (inter-laboratory) field duplicate (analysed by Envirolab), QC testing comprised one blind (intra-laboratory) field duplicate, an equipment rinsate blank, a laboratory-prepared trip spike soil sample and a laboratory-prepared trip blank soil sample, all analysed by SGS.

5.7 Groundwater Sampling

The groundwater sampling works are described in **Table 5-5**. The monitoring well location is illustrated in **Figure 2**, **Appendix A**.

Table 5-5 Summary of Groundwater Sampling Methodology

Activity/Item	Details
Fieldwork	Three groundwater monitoring wells were installed on 21 and 28 May 2022.
Well Construction	Well construction was in general accordance with the standards described in NUDLC (2020) and involved the following: ▪ Ø50 mm, Class 18 uPVC, threaded, machine-slotted screen and casing; ▪ Base and top of each well was sealed with a uPVC cap; ▪ Annular, graded sand filter was used to approximately 300 mm above top of screen interval; ▪ Granular bentonite was applied above annular filter to seal the screened interval; ▪ Cuttings backfilled to just below ground level; and ▪ Surface completion comprised of a stick-up section of pipe (-0.1 mBGL), a plastic J-cap closing the well and a gatic cover at ground level.
Well Development	Well development was conducted after installation. This involved agitation within the full length of the water column using a dedicated, HDPE, disposable bailer, followed by removal of water and accumulated sediment.
Well Gauging	Monitoring wells were gauged to determine standing water levels (SWLs) prior to groundwater sampling. Gauging was conducted with a water/oil interface probe.
Well Purging and Field Testing	The measurement of water quality parameters was conducted repeatedly during purging and the details were recorded onto field data sheets, until water quality parameters stabilised. Field measurements for Dissolved Oxygen (DO), Electrical Conductivity (EC), temperature, oxidation-reduction potential (ORP) and pH of the purged water were also recorded during well purging. Field test results are summarised in **Table 7-3.**
Groundwater Sampling	Groundwater samples were collected using a peristaltic low flow pump. Water was continuously measured for five parameters (Temperature, EC, ORP, DO, pH). Once three consecutive field measurements were recorded for purged water to within ± 10% for DO, ± 3% for EC , ± 0.2 units for pH, ± 0.2° for temperature and ± 20 mV for ORP, this was considered to indicate that representative groundwater quality had been achieved and final physio-chemical measurements were recorded. Groundwater

Activity/Item	Details
	samples were then collected from the low flow sampling pump discharge point.
Decontamination Procedure	The water level probe was washed in a solution of potable water and *Decon 90* (or PFAS decon for PFAS sampling) and then rinsed with potable water.
Sample Preservation	Sample containers were supplied by the laboratory with the following preservatives: ▪ one, 1 litre amber glass, acid-washed and solvent-rinsed bottle; ▪ two, 40ml glass vials, pre-preserved with dilute hydrochloric acid, Teflon-sealed; ▪ one, 250mL, HDPE bottle, pre-preserved with dilute nitric acid (1mL); and ▪ one, PFAS bottle container. Samples for metals analysis were field-filtered using 0.45 µm pore-size membranes. All containers were filled with sample to the brim then capped and stored in insulated chests (containing ice bricks), until completion of the fieldwork and during sample transit to the laboratory.
Sample Transport	After sampling, the ice brick filled chests were transported to the laboratories using strict COC procedures. SRA was provided by the laboratory to document sample condition upon receipt. Copies of the SRA and COC certificates are presented in **Appendix G**.
Laboratory Analysis and Quality Control	Groundwater samples were analysed by SGS and Envirolab for the COPC. In addition to the split (inter-laboratory) field duplicate (analysed by Envirolab), QC testing comprised a blind (intra-laboratory) field duplicate, an equipment rinsate blank, a laboratory-prepared, trip spike water sample and a laboratory-prepared, trip blank water sample, all tested by SGS.

6. DATA QUALITY ASSESSMENT

The assessment of data quality is defined as the scientific and statistical evaluation of environmental results to determine if they meet the objectives of the project (USEPA, 2006). For this DSI, data quality assessment involved an evaluation of the compliance of the field (sampling) and laboratory procedures with established protocols, as well as the accuracy and precision of the associated results from the quality control measures. The findings are summarised in **Table 6-1** and discussed in detail in **Appendix I**.

In summary, the overall quality of the analytical data from this DSI was considered to be of an acceptable standard for interpretive use and preparation of an updated CSM.

Table 6-1 Quality Control Process

Stage	Control	Conformance [Yes, Part, No]	Report Section(s)
Preliminaries	DQO established	Yes	See **Sections 5.2** and **5.3**
Field Work	Suitable documentation of fieldwork observations including borehole logs, field notes.	Yes	See **Appendices E** and **F**
Sampling Plan	Use of relevant and appropriate sampling plan (density, type, and location)	Yes	See **Section 5.4**
	All media sampled and duplicates collected	Yes	See **Appendix G**
	Use of approved and appropriate sampling methods (soil, groundwater, soil vapour)	Yes	See **Sections 5.6** and **5.7**
	Selection of soil samples according to field PID readings (where VOC are present)	Yes	See **Section 7**
	Preservation and storage of samples upon collection and during transport to the laboratory	Yes	See **Sections 5.6** and **5.7**
	Appropriate field rinsate and trip blanks taken	Yes	See **Appendix G**
	Completed field and analytical laboratory sample COC procedures and documentation	Yes	See **Appendix G**
Laboratory	Sample holding times within acceptable limits	Yes	See **Appendices H, I, J**
	Use of appropriate analytical procedures and NATA-accredited laboratories	Yes	See **Appendices H, I, J**
	LOR/PQL low enough to meet adopted criteria	Yes	See **Appendices H, I, J**
	Laboratory blanks	Yes	See **Appendices H, I, J**
	Laboratory duplicates	Yes	See **Appendices H, I, J**
	Matrix spikes	Yes	See **Appendices H, I, J**
	Surrogates (or System Monitoring Compounds)	Yes	See **Appendices H, I, J**
	Analytical results for replicated samples, including field and laboratory duplicates and inter-laboratory duplicates, expressed as RPD	Yes	See **Appendices H, I, J**

Stage	Control	Conformance [Yes, Part, No]	Report Section(s)
	Checking for the occurrence of apparently unusual or anomalous results (e.g. laboratory results that appear to be inconsistent with field observations or measurements)	Yes	See **Appendices B, E, F**
Reporting	Report reviewed by senior staff to confirm project meets NSW EPA guidelines and objectives	Yes	See **Document Control**

7. RESULTS

7.1 Soil Field Results

7.1.1 Sub-Surface Conditions

The general site lithology encountered during the soil investigation was a layer of filling (to the depths of up to 3.0 mBGL), overlying natural sand / clay soils. More details are provided in **Table 7-1** and borehole logs are presented in **Appendix E**.

Table 7-1 Generalised Sub-Surface Profile

Layer	Description	Minimum and Maximum Depth (mBGL)
Hardstand	Concrete/brick	0.0 – 0.43
Fill	Gravelly SAND; fine to medium grained, dark brown, with gravels, with plastic.	0.04 – 0.4+
	Silty SAND; fine to medium grained, brown/grey.	0.0 – 3.0
Natural	Silty SAND: Fine to medium grained, brown to light grey.	2.5 – 5.5+
	Silty CLAY; low plasticity, dark brown.	0.9 – 2.5
	Sandy CLAY; low to medium plasticity, brown/orange red.	2.9 – 7.2+

Note 1 + Termination depth of deepest borehole.

7.1.2 Field Observations and PID Results

Soil samples were collected from the test bores at various depths ranging between 0.1-4.1 mBGL. All examined soil samples were evaluated on a qualitative basis for odour and visual signs of contamination (e.g. hydrocarbon odours, oil staining, petrochemical filming, asbestos fragments, ash, charcoal) and the following observations were noted:

- No suspicious odours were detected in any of the examined soils;
- No soil staining was observed in any of the examined soils;
- No fragments of potential ACM were observed in any of the drilled/examined soils;
- No ash or slag was observed in any of the examined soils; and
- VOC concentrations from collected soil samples were low (<1 parts per million (ppm)). VOC concentrations were field-screened using a portable Photo-ionisation Detector (PID).

7.2 Groundwater Field Results

7.2.1 Monitoring Well Construction

Three groundwater monitoring wells were installed on 21 and 28 May 2022. Construction details for the installed groundwater monitoring well are summarised in **Table 7-2**.

Table 7-2 Monitoring Well Construction Details

Well ID	Well Depth (mBGL)	Well Stick-up (mBGL)	Screen Interval (mBGL)	Groundwater Seepage (mBGL)	Lithology Screened
GW-BH1	4.6	-0.1	2.0 - 4.6	2.5	Silty CLAY / SAND
GW-BH2	7.0	-0.1	4.0 - 7.0	5.1	Sandy Clay
GW-BH3	6.9	-0.1	3.9 - 6.9	5.2	Sandy Clay

7.2.2 Field Observations

A GME was conducted on 4 June 2022. Field data were recorded before sampling, as presented in **Table 7-3**. Field data sheets are attached in **Appendix F**. Samples were then evaluated on the basis of odour and visual signs of contamination, with the following observations noted:

- Groundwater was found to be light orange in colour, with low turbidity;
- No suspicious odours were detected in any of the groundwater wells;
- No sheen was observed on the sampled groundwater;
- The SWL ranged between 2.43 and 4.20 mBGL; and
- Well headspace PID readings ranged between 0.3ppm and 2.7ppm.

Table 7-3 Groundwater Field Data

Well	SWL (mBGL)	SWL* (mAHD)	DO (mg/L)	pH	EC (µS/cm)	Temperature (°C)	ORP (mV)
GW-BH1	2.43	10.87	1.35	5.40	411	19.09	315.7
GW-BH2	4.17	11.92	0.35	4.06	331	19.98	370.0
GW-BH3	4.20	11.89	0.71	4.18	1,221	19.81	366.9

Notes:
SWL – Standing Water Level
mBGL – metres below ground level (all wells were completed as standpipes with stick-up heights measured as shown in field notes under **Appendix H**)
ORP readings were adjusted to Standard Hydrogen Electrode (SHE) by adding field electrode potential (205mV).
*Groundwater wells were not surveyed. Groundwater well elevations were extrapolated using survey plan (**Appendix C**)

7.3 Laboratory Analytical Results

7.3.1 Soil Analytical Results

Summary of the soil analytical results is presented in **Table 7-4**. Detailed tabulation is presented in **Table T-1**, **Appendix B**.

Table 7-4 Summary of Soil Analytical Results

Number of Primary Samples	Analyte	Minimum Concentration (mg/kg)	Maximum Concentration (mg/kg)	Samples Exceeding SILs
Priority Metals				
12	Arsenic	<1	5	None
12	Cadmium	<0.3	4.8	None
12	Chromium (Total)	<0.5	29	None
12	Copper	<0.5	320	None
12	Lead	<1	310	None
12	Mercury	<0.05	0.08	None
12	Nickel	<0.5	88	None
12	Zinc	<2	560	None
12	Tin	<3	74	None
PAH				
12	Naphthalene	<0.1	<0.1	None
12	Benzo(a)pyrene	<0.1	0.1	None
12	Carcinogenic PAH (as B(a)P TEQ)	<0.3	<0.3	None
12	Total PAH	<0.8	<0.8	None
BTEX and TRH				
12	Benzene	<0.1	<0.1	None
12	Toluene	<0.1	<0.1	None
12	Ethyl benzene	<0.1	<0.1	None
12	Xylenes (Total)	<0.3	<0.3	None
12	TRH - F1	<25	<25	None
12	TRH - F2	<25	<25	None
12	TRH - F3	<90	<90	None
12	TRH - F4	<120	<120	None
Pesticides and PCB				
7	OCP	<1	<1	None
7	OPP	<1.7	<1.7	None
7	Total PCB	<1	<1	None
Asbestos				
7	Asbestos	Not detected	Detected	BH7_0.1-0.2 (friable and bonded)

7.3.2 Groundwater Analytical Results

Summary of the groundwater analytical results is presented in **Table 7-5**. Detailed tabulation is presented in **Table T-2**, **Appendix B**.

Table 7-5 Summary of Groundwater Analytical Results

Number of Primary Samples	Analyte	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Sample(s) Exceeding GILs
Priority Metals				
3	Arsenic	<1	<1	None
3	Cadmium	<0.1	<0.1	None
3	Chromium (Total)	<1	<1	None
3	Copper	1	3	ANZG (2018) 1.4 µg/L GW_BH2 and GW_BH3 (2 and 3 µg/L)
3	Lead	<1	1	None
3	Mercury	<0.1	<0.1	None
3	Nickel	2	7	None
3	Zinc	<5	19	ANZG (2018) 8 µg/L GW_BH1 and GW_BH3 (13 and 19 µg/L)
PAH				
3	Naphthalene	<0.1	<0.1	None
3	Benzo(α)pyrene	<0.1	<0.1	None
3	Total PAH	<1	<1	None
BTEX and TRH				
3	Benzene	<0.5	<0.5	None
3	Toluene	<0.5	<0.5	None
3	Ethyl benzene	<0.5	<0.5	None
3	o-xylene	<0.5	<0.5	None
3	m + p-xylene	<1	<1	None
3	TRH - F1	<50	170	PQL (50 µg/L) GW_BH1 (170 µg/L)
3	TRH - F2	<60	72	PQL (60 µg/L) GW_BH3 (72 µg/L)
3	TRH - F3	<500	<500	None
3	TRH - F4	<500	<500	None
VOC				
3	Total VOC	<10	130	None
3	cis-1,2-dichloroethene	<0.5	3.4	None
3	Trichloroethene (TCE)	<0.5	120	NJDEP (2021) 3µg/L GW_BH1 (120 µg/L)
3	Perchloroethylene (PCE)	<0.5	1	None

Number of Primary Samples	Analyte	Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Sample(s) Exceeding GILs
Phenols				
3	Total Phenols	<50	<50	None
PFAS				
3	PFOS	<0.002	0.010	None
3	PFOS + PFHxS	<0.002	0.043	None
3	PFOA	<0.002	0.002	None

8. SITE CHARACTERISATION

8.1 Subsurface Conditions

The general site lithology encountered during the soil investigation was a layer of filling (to the depths of up to 3.0 mBGL), overlying natural sand / clay soils.

8.2 Soil Impacts

Contaminant concentrations in representative soil samples were found to be below the adopted criteria applicable for the proposed land use setting, with the following exception:

- Friable and bonded asbestos was detected in shallow fill at BH7 (depths 0.1-0.2 mBGL).

Previous investigation by JKE (2022) also reported asbestos in fill soils at two locations, being JKE_BH6 (depths 0.13-0.35 mBGL) and JKE_BH7 (depths 0.2-0.6 mBGL).

8.3 Groundwater Impacts

During the GME on 4 June 2022, depth to water readings ranged from 2.43 to 4.20 mBGL. Groundwater flow direction was inferred to be north-east, towards Brookvale Creek.

With reference to **Table T-2** (**Appendix B**), concentrations of BTEX, PAHs, phenols, pesticides and PFAS were all reported below the adopted GIL, with the exception of priority metals, TRHs and CVOCs as noted below:

Priority Metals

For priority metals, copper and zinc were detected in groundwater at levels slightly above the adopted GIL. However, as the elevations of metal concentrations are common in disturbed urban groundwater environments, the detected concentrations are considered to be indicative of natural (background) conditions, rather than site-specific impacts.

TRHs

TRH-F1 concentrations above the laboratory practical quantitation limit (PQL) were detected at GW-BH1 (170 µg/L), while TRH-F2 concentrations above the PQL were detected at GW-BH3 (72 µg/L).

CVOCs

CVOCs were only detected in groundwater at well GW-BH1. The detected contaminants included perchloroethylene (PCE – also known as tetrachloroethene) and its breakdown products cis-1,2-dichloroethene (cis-DCE) and Trichloroethylene (TCE).

PCE and TCE are industrial solvents used for degreasing, dry cleaning and textile processing. The source of these elevated concentrations was likely associated with potential migration of contaminations from the neighbouring property, which was noted to be a potential active laundry located up-gradient of well GW-BH1.

8.4 Review of Conceptual Site Model

On the basis of the DSI findings, the CSM discussed in **Section 4** was considered to appropriately identify contamination sources, migration mechanisms and exposure pathways,

as well as potential on-site and off-site receptors. A complete revision of the CSM should be presented by the remediation action plan (RAP) (see recommendations in **Section 10**).

9. CONCLUSION

The property located at 101-105 Old Pittwater Road, Brookvale NSW was the subject of a DSI, conducted in order to assess the nature and degree of on-site contamination. The key findings of this DSI were as follows:

- The site consists of a number of warehouse buildings and small commercial / industrial units. Current commercial activities identified on the site include a marble and stone worker warehouse and associated showrooms, a kayak retailer, a retail display manufacturer, a landscaping business, a pipe repairer, a retail research and a virtual design company.
- There were no evidences of underground petroleum storage systems (UPSS), underground storage tanks (UST), or above-ground storage tank (AST) present on the site.
- The subsurface conditions were generalised as a layer of filling (to the depths of up to 3.0 mBGL), overlying natural sand / clay soils.
- Contaminant concentrations in representative soil samples were found to be generally below the adopted human health and ecological criteria applicable to commercial / industrial land use settings, with the following exceptions:
  - Friable and bonded asbestos were detected in shallow fill at BH7 (depths 0.1-0.2 mBGL); and
  - Asbestos was also identified in fill soils at two previous locations investigated by JKE (2022), being JKE_BH6 (depths 0.13-0.35 mBGL) and JKE_BH7 (depths 0.2-0.6 mBGL).
- Screening for volatile organic compounds (VOC) in soil headspace samples was conducted using a pre-calibrated PID. VOC concentrations from collected soil samples were low (<1 ppm).
- Depth to water in the groundwater monitoring wells (GW-BH1 to GW-BH3) was recorded between 2.43 and 4.20 mBGL. Groundwater flow direction was inferred to be north-easterly, towards Brookvale Creek (170m east from the site).
- Contaminant concentrations in groundwater were generally compliant with the adopted criteria, with the following exceptions:
  - Priority metals (copper and zinc) were detected in groundwater at levels marginally above the adopted criteria. However, these detected concentrations are consistent with the local disturbed urban background conditions and unlikely to be associated with site-specific impacts.
  - TRH-F1 concentrations above the laboratory practical quantitation limit (PQL) were detected at GW-BH1 (170 µg/L), while TRH-F2 concentrations above the PQL were detected at GW-BH3 (72 µg/L).
  - Chlorinated volatile organic compounds (CVOCs) were only detected in groundwater at GW-BH1. The detected contaminants included perchloroethylene (PCE) and its breakdown products cis-1,2-dichloroethene (cis-DCE) and Trichloroethylene (TCE).

    PCE is an industrial solvent used for dry cleaning and textile processing. The source of these elevated concentrations is likely associated with potential migration of contaminations from the neighbouring property, which was noted to be a potential active laundry located up-gradient of well GW-BH1.

Based on the findings obtained from this DSI, and with consideration of EI's *Statement of Limitations* (**Section 11**), EI concludes that:

- There are localised areas of impacted soils (asbestos) above the adopted human health criteria that potentially pose human health risks;
- TRHs and chlorinated VOCs are present in groundwater at GW-BH1. As the proposed basement is expected to intercept groundwater, a risk assessment must be conducted to inform the design of protection measures to be implemented during and after the building construction. These protection measures will protect future receptors from any potential risks posed by these contaminants via direct contact (construction and future intrusive workers) or vapour intrusion (future users of the basement); and
- The site can be made suitable for the potential future site development, provided the recommendations detailed in **Section 10** are implemented.

10. RECOMMENDATIONS

EI provides the following recommendations in relation to the proposed development:

- Before commencement of demolition works, a Hazardous Materials Survey (HMS) shall be completed by a suitably qualified consultant, to identify any hazardous materials present within the existing building fabrics.
- Preparation and implementation of a Remediation Action Plan (RAP), which will include the design and/or outcomes of supplementary investigations to close data gaps remaining at the site, including:
  - Delineation of the vertical and lateral extent of detected soil impacts (asbestos) at various locations as detailed in **Section 8.2**;
  - Chase-out, excavation and removal of all impacted soils identified during the delineation works;
  - Soil vapour assessment at depths comprising the vadose zone immediately below the future basement slab; and
  - Preparation of a sampling and analysis quality plan (SAQP) for a post-remedial validation assessment aimed at confirming that site remediation was effective.
- Implementation of the remediation and validation works for the site, as outlined in the RAP.
- Preparation of a validation report by a suitably qualified environmental consultant, confirming site suitability for the proposed land use.
- Any material being removed from site (including potential virgin excavated natural materials (VENM) be classified for off-site disposal in accordance the NSW EPA (2014) *Waste Classification Guidelines*.
- Any material being imported to the site should be validated as suitable for the intended use in accordance with NSW EPA (2014) guidelines.

11. STATEMENT OF LIMITATIONS

This report has been prepared for the exclusive use of Hannas Contracting Services Pty Ltd, whom is the only intended beneficiary of EI's work. The scope of the investigation carried out for the purpose of this report was limited to that agreed with Hannas Contracting Services Pty Ltd.

No other party should rely on this document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

The findings presented in this report are the result of discrete and specific sampling methodologies used in accordance with best industry practices and standards. Due to the site-specific nature of soil sampling from point locations, it is considered likely that all variations in subsurface conditions across a site cannot be fully defined, no matter how comprehensive the field program.

While normal assessments of data reliability have been made, EI assumes no responsibility or liability for errors in any data obtained from previous assessments conducted on site, regulatory agencies (e.g. Council, NSW EPA), statements from sources outside of EI, or developments resulting from situations outside the scope of works of this project.

Despite all reasonable care and diligence, the ground conditions encountered and concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. In addition, site characteristics may change at any time in response to variations in natural conditions, chemical reactions and other events (e.g. groundwater movement and or spillages of contaminating substances). These changes may occur subsequent to EI's investigation.

EI's assessment is necessarily based upon the results of the site investigation and the restricted program of surface and subsurface sampling, screening and chemical testing which was set out in the project proposal. Neither EI, nor any other reputable consultant, can provide unqualified warranties nor does EI assume any liability for site conditions not observed or accessible during the time of the investigations.

This report was prepared for Hannas Contracting Services Pty Ltd and no responsibility is accepted for use of any part of this report in any other context or for any other purpose or by other third parties. This report does not purport to provide legal advice.

This report and associated documents remain the property of EI subject to payment of all fees due for this assessment. The report shall not be reproduced except in full and with prior written permission by EI.

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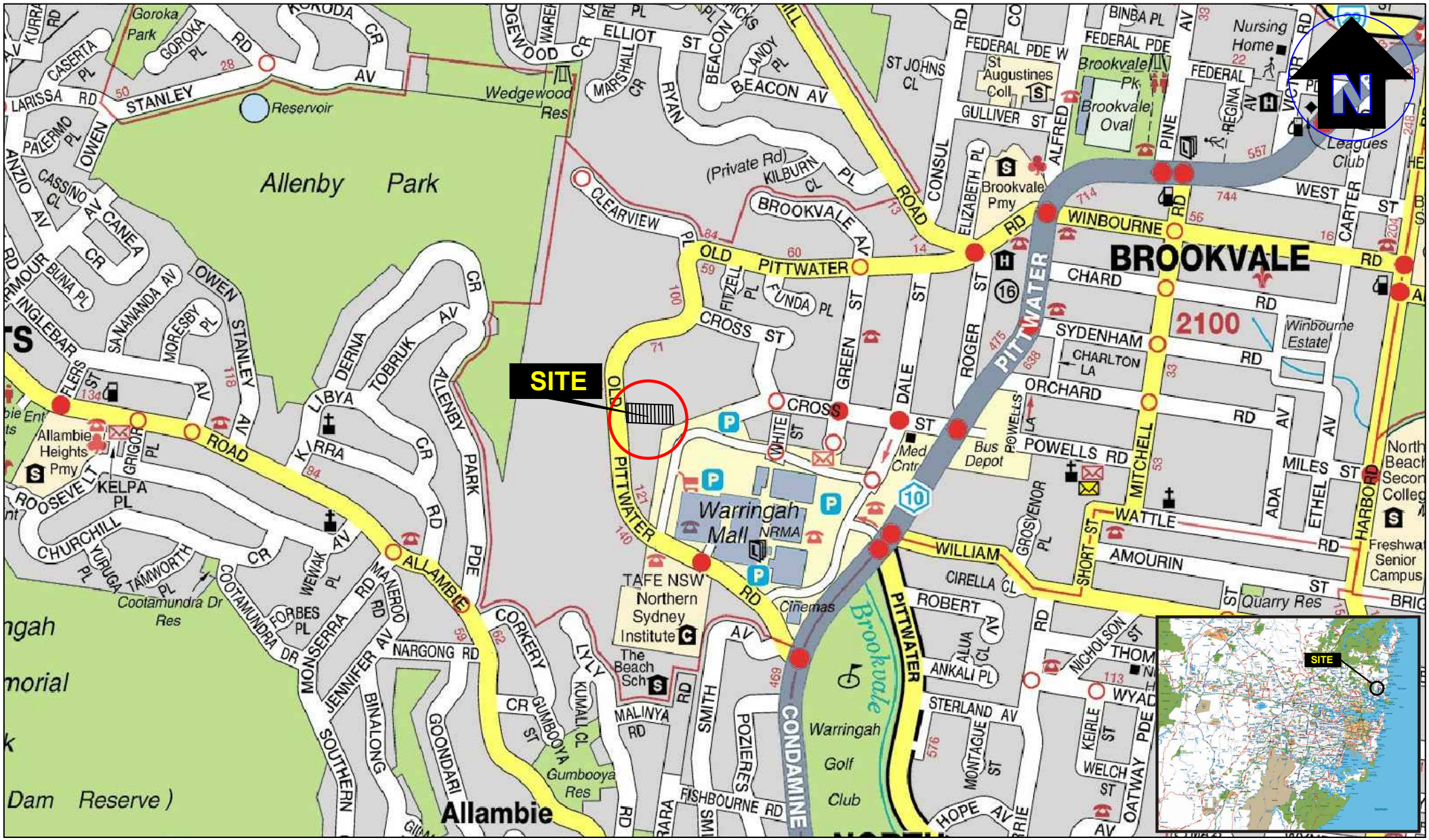
ABBREVIATIONS

ACM	Asbestos-Containing Materials
AMP	Asbestos Management Plan
ASS	Acid Sulfate Soils
AST	Above-ground Storage Tank
B(a)P	Benzo(a)Pyrene (a PAH compound)
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CCO	Chemical Control Order
COC	Chain of Custody
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compounds (a sub-set of the VOC suite)
DO	Dissolved Oxygen
DP	Deposited Plan
DSI	Detailed Site Investigation
EC	Electrical Conductivity
EI	EI Australia
NSW EPA	Environment Protection Authority (of New South Wales)
F1	C_6-C_{10} TRH (less the sum of BTEX concentrations)
F2	>C_{10}-C_{16} TRH (less the concentration of naphthalene)
F3	TRH >C16-C34
F4	TRH >C34-C40
FFL	Finished Floor Level
GIL	Groundwater Investigation Level
GIPA	Government Information Public Access
GME	Groundwater Monitoring Event
HDPE	High Density Polyethylene
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
JKE	JK Environments
km	Kilometres
L	Litres
LEP	Local Environmental Plan
LGA	Local Government Area
LOR	Limit of Reporting (limit of reporting for respective laboratory method)
m	Metres
mAHD	Metres Australian Height Datum
mBGL	Metres Below Ground Level
µg/L	Micrograms per Litre
mg/L	Milligrams per Litre
mV	Millivolts
N/A	Not Applicable
NATA	National Association of Testing Authorities, Australia
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NSW	New South Wales
OCP	Organochlorine Pesticides
OPP	Organophosphate Pesticides
ORP	Oxidation-Reduction Potential
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls

PFAS	Per- and Poly-Fluoroalkyl Substances
POEO	Protection of the Environment Operations
pH	Potential Hydrogen (a measure of the acidity or basicity of an aqueous solution)
PID	Photo-Ionisation Detector
PQL	Practical Quantitation Limit (limit of detection for respective laboratory method)
PSH	Phase-Separated Hydrocarbons
QA/QC	Quality Assurance / Quality Control
RAP	Remediation Action Plan
SAQP	Sampling and Analysis Quality Plan
SIL	Soil Investigation Level
SOP	Standard Operating Procedure
SRA	Sample Receipt Advice (document confirming laboratory receipt of samples)
SWL	Standing Water Level
TEQ	Toxicity Equivalent Quotient
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
UCL	Upper Confidence Limit (of the mean)
UPSS	Underground Petroleum Storage System
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VENM	Virgin Excavated Natural Material
VOC	Volatile Organic Compounds (specific organic compounds which are volatile)

Appendix A – Figures



Drawn:	R.L.	
Approved:	-	
Date:	6-06-22	
Scale:	Not To Scale	

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Detailed site Investigation

101-105 Old Pittwater Rd, Brookvale NSW

Site Locality Plan

Figure: 1

Project: E24468.E02_Rev0

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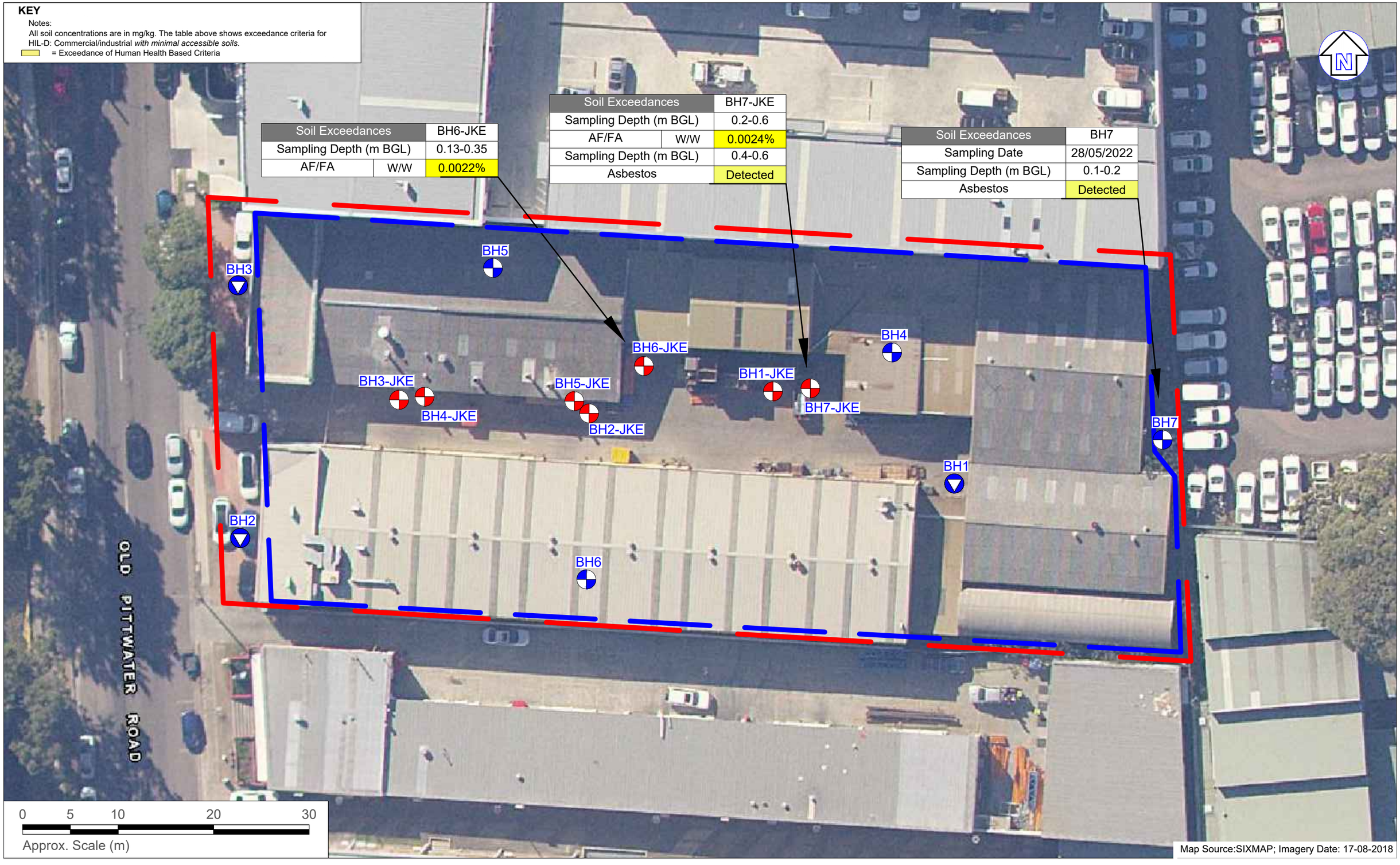
KEY

Notes:
All soil concentrations are in mg/kg. The table above shows exceedance criteria for HIL-D: Commercial/industrial *with minimal accessible soils*.
= Exceedance of Human Health Based Criteria

Soil Exceedances		BH6-JKE
Sampling Depth (m BGL)		0.13-0.35
AF/FA	W/W	0.0022%

Soil Exceedances		BH7-JKE
Sampling Depth (m BGL)		0.2-0.6
AF/FA	W/W	0.0024%
Sampling Depth (m BGL)		0.4-0.6
Asbestos		Detected

Soil Exceedances	BH7
Sampling Date	28/05/2022
Sampling Depth (m BGL)	0.1-0.2
Asbestos	Detected



Map Source:SIXMAP; Imagery Date: 17-08-2018

LEGEND (All locations are Approximate)

- Site boundary
- Proposed basement boundary
- Previous borehole location (JKE,2022)
- Borehole location
- Borehole / monitoring well location

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Remedial Action Plan
101-105 Old Pittwater Rd, Brookvale NSW
Sampling Location Plan and Exceedances Plan

Figure: 2

Project: E25568.E02

KEY

Notes:
All Groundwater concentrations are in µg/L. The table shows exceedance criteria for fresh water ANZG(2018) and Groundwater investigation levels for fresh waters.
= Exceedance of Ecological Based Criteria
= Exceedance of Human Health Based Criteria

Groundwater Exceedances		BH3
Sampling Date		4-06-2022
Copper	µg/L	2
Zinc	µg/L	19
TRH F2	µg/L	72

Groundwater Exceedances		BH1
Sampling Date		4-06-2022
TRH F1	µg/L	170
Zinc	µg/L	13
TCE	µg/L	120

Groundwater Exceedances		BH2
Sampling Date		4-06-2022
Copper	µg/L	3

BH5
BH3
BH6-JKE
BH4
BH1-JKE
BH7-JKE
BH3-JKE
BH4-JKE
BH5-JKE
BH2-JKE
BH7
BH1
BH2
BH6
11.8
11.6
11.2
11.4
11.6
11.8
Approx GW Flow Direction
OLD PITTWATER ROAD

0 5 10 20 30
Approx. Scale (m)

Map Source:SIXMAP; Imagery Date: 17-08-2018

LEGEND (All locations are Approximate)

- Site boundary
- Proposed basement boundary
- Previous borehole location (JKE,2022)
- Borehole location
- Monitoring well location
- Inferred groundwater flow direction
- Note: Groundwater RL in mAHD, based on SWLs measured on 4-6-22

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Detailed Site Investigation
101-105 Old Pittwater Rd, Brookvale NSW
Groundwater Contour Plan and Exceedances Plan

Figure: 3

Project: E25568.E02_Rev0

Appendix B – Tables

Table T1 – Summary of Soil Test Results

Sample ID	Sampling Date	Priority Metals									PAHs							BTEX				TRHs				VOCs		Total Phenols	Pesticides		PCBs	Asbestos	PFAS		
		As	Cd	Cr[#]	Cu	Pb	Hg	Ni	Zn	Sn	Carcinogenic PAHs (as BaP TEQ)	Benzo(a)pyrene	Benzo(b&j)fluoranthene *	Pyrene *	Fluoranthene *	Total PAHs	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	F1	F2	F3	F4	Trichloroethene (Trichloroethylene - TCE)*	Total VOCs		OCPs	OPPs		Presence / absence (FA and AF)	PFOS	PFOS+PFHxS	PFOA
Preliminary Site Investigation (JKE, 2022)																																			
Fill																																			
BH4_0.24-0.45	22/01/2022	6	0.6	13	2	9	<0.1	1	6	N.A.	<0.5	<0.05	<0.2	<0.1	<0.1	<0.5	<0.1	<0.2	<0.5	<1	<3	<25	<50	<100	<100	N.A.	N.A.	N.A.	<0.1	<PQL	<0.1	N.A.	N.A.	N.A.	N.A.
BH5_0.2-0.5	22/01/2022	<4	<0.4	2	1	12	<0.1	<1	10	N.A.	<0.5	<0.05	<0.2	<0.1	<0.1	<0.5	<0.1	<0.2	<0.5	<1	<3	<25	<50	<100	<100	N.A.	N.A.	N.A.	<0.1	<PQL	<0.1	No	N.A.	N.A.	N.A.
BH6_0.13-0.35	22/01/2022	7	0.4	18	12	12	<0.1	4	13	N.A.	<0.5	<0.05	<0.2	<0.1	<0.1	<0.5	<0.1	<0.2	<0.5	<1	<3	<25	54	330	<100	N.A.	N.A.	N.A.	<0.1	<PQL	<0.1	0.0022%w/w	N.A.	N.A.	N.A.
BH7_0.2-0.6	22/01/2022	<4	23	17	40	420	<0.1	5	11000	N.A.	<0.5	0.3	0.5	0.5	0.5	3	<0.1	<0.2	<0.5	<1	<3	<25	<50	<100	<100	N.A.	N.A.	N.A.	<0.1	<PQL	<0.1	0.0024%w/w	N.A.	N.A.	N.A.
BH7_0.4-0.6	22/01/2022	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	Yes	N.A.	N.A.	N.A.
Statistical Analysis																																			
Maximum concentration		7	23	18	40	420	<0.1	5	11000	NC	<0.5	0.3	0.5	0.5	0.5	3	<0.1	<0.2	<0.5	<1	<3	<25	54	330	<100	NC	NC	NC	<0.1	<PQL	<0.1	Yes	NC	NC	NC
Natural																																			
BH4_0.5-0.9	22/01/2022	<4	<0.4	8	<1	12	<0.1	2	17	N.A.	<0.5	<0.05	<0.2	<0.1	<0.1	<0.5	<0.1	<0.2	<0.5	<1	<3	<25	<50	<100	<100	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	No	N.A.	N.A.	N.A.
BH5_0.6-0.8	22/01/2022	<4	<0.4	8	<1	10	<0.1	2	27	N.A.	<0.5	<0.05	<0.2	<0.1	<0.1	<0.5	<0.1	<0.2	<0.5	<1	<3	<25	<50	<100	<100	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
BH6_0.6-0.8	22/01/2022	<4	<0.4	5	4	17	<0.1	<1	79	N.A.	<0.5	<0.05	<0.2	<0.1	<0.1	<0.5	<0.1	<0.2	<0.5	<1	<3	<25	<50	<100	<100	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
BH7_0.9-1.2	22/01/2022	<4	<0.4	<1	3	18	<0.1	<1	35	N.A.	<0.5	<0.05	<0.2	<0.1	<0.1	<0.5	<0.1	<0.2	<0.5	<1	<3	<25	<50	<100	<100	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Statistical Analysis																																			
Maximum concentration		<4	<0.4	8	4	18	<0.1	2	79	NC	<0.5	<0.05	<0.2	<0.1	<0.1	<0.5	<0.1	<0.2	<0.5	<1	<3	<25	<50	<100	<100	NC	NC	NC	NC	NC	NC	No	NC	NC	NC
Detailed Site Investigation (EI, 2022)																																			
Fill																																			
BH1_0.3-0.4	21/05/2022	1	<0.3	1.7	<0.5	5	<0.05	<0.5	<2	<3	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	<0.5	<1	<1.7	<1	No	<0.0016	<0.0016	<0.0008
BH2_1.5-1.6	21/05/2022	<1	<0.3	5.5	1.1	6	0.05	1.5	3.8	<3	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	<0.5	<1	<1.7	<1	No	<0.0016	<0.0016	<0.0008
BH3_0.2-0.3	28/05/2022	1	<0.3	18	<0.5	6	<0.05	0.7	3.7	<3	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	<0.5	<1	<1.7	<1	No	<0.0016	<0.0016	<0.0008
BH4_0.4-0.5	28/05/2022	<1	<0.3	<0.5	<0.5	<1	<0.05	<0.5	<2	<3	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	0.8	<1	<1.7	<1	No	<0.0016	<0.0016	<0.0008
BH5_0.2-0.3	28/05/2022	<1	<0.3	2.9	14	160	0.08	0.7	63	<3	<0.3	<0.1	<0.1	<0.1	0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	0.6	<24	<0.5	<1	<1.7	<1	No	<0.0016	<0.0016	<0.0008
BH6_0.2-0.3	28/05/2022	<1	<0.3	4	9.5	13	<0.05	1.9	23	<3	<0.3	0.1	0.1	0.2	0.2	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	0.2	<24	<0.5	<1	<1.7	<1	No	<0.0016	<0.0016	<0.0008
BH7_0.1-0.2	28/05/2022	5	4.8	29	320	310	0.08	88	560	74	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	<0.5	<1	<1.7	<1	Yes (>0.01%w/w)	<0.0016	<0.0016	<0.0008
Statistical Analysis																																			
Maximum concentration		5	4.8	29	320	310	0.08	88	560	74	<0.3	0.1	0.1	0.2	0.2	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	0.6	<24	0.8	<1	<1.7	<1	Yes	<0.0016	<0.0016	<0.0008
Natural																																			
BH1_1.0-1.1	21/05/2022	<1	<0.3	5.3	<0.5	7	<0.05	0.6	5.1	N.A.	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
BH2_3.5-3.6	21/05/2022	1	<0.3	10	<0.5	7	<0.05	0.9	2.7	N.A.	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
BH3_3.0-3.1	28/05/2022	1	<0.3	14	<0.5	7	<0.05	1.5	4.2	N.A.	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
BH4_1.2-1.3	28/05/2022	<1	<0.3	1.7	<0.5	3	<0.05	<0.5	<2	N.A.	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
BH5_2.3-2.4	28/05/2022	<1	<0.3	3.4	<0.5	4	<0.05	0.5	<2	N.A.	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Statistical Analysis																																			
Maximum concentration		1	<0.3	14	<0.5	7	<0.05	1.5	5.1	N.A.	<0.3	<0.1	<0.1	<0.1	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<0.1	<24	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
NEPM (2013) Criteria																																			
HIL D - *Commercial / Industrial*		3,000	900	3,600 Cr(VI)	240,000	1,500	730	6,000	400,000		40					4,000												3,600		7				
HSL D - *Commercial / Industrial* Soil texture classification – Sand		Source depths (0 m to <1 m. BGL)																NL	3	NL	NL	230	260	NL							0.05 / 0.001			
		Source depths (1 m to <2 m. BGL)																NL	3	NL	NL	NL	370	NL											
		Source depths (2 m to <4 m. BGL)																NL	3	NL	NL	NL	630	NL											
		Source depths (4 m + BGL)																NL	3	NL	NL	NL	NL	NL											
EILs / ESLs - *Commercial / Industrial* [1] [2]		160		680	210	1,800		110	570			172 [3]						370	75	135	165	180	215	170	1,700	3,300			640						
Management Limits – *Commercial / Industrial* [1]																							700	1,000	3,500	10,000									
(HEPA (2020)) PFAS [4]																																	20	50	

Notes:

	Highlighted values exceed HIL / HSL
	Concentration exceeds highlighted criteria

Results are recorded in mg/kg

HIL D	NEPC 1999 Amendment 2013 'HIL D' - Health based commercial / industrial settings.
HSL D	NEPC 1999 Amendment 2013 'HSL D' Health Based Screening Levels applicable for vapour intrusion values applicable for commercial / industrial settings.
EIL	Ecological Investigation Level for urban residential and public open space land use.
ESL	Ecology Screening Level for urban residential and public open space land use.
#	Thresholds are for Chromium VI.
*	Only detected concentrations were tabulated
NA	Not Analysed
NL	Not Limiting' If the derived soil vapour limit exceeds the soil concentration at which the pore water phase cannot dissolve any more of the individual chemical
NC	Not calculated
1	Coarse grained soil assessment criteria values were applied, as a conservative approach.
2	EIL criteria is derived from a site specific Added Contaminant Limit (ACL) with the Ambient Background Concentration (ABC) for a high traffic NSW suburb.
3	The ecological criteria for benzo(o)pyrene was sourced from CRC Care (2017) Technical Report No. 39 Risk-based management and remediation guidance for benzo(a)pyrene.
4	Value dervied from the National Environmental Management Plan for PFAS - Soil Criteria for Investigation - Human Health Based Guidance Values for Industrial / Commercial Sites.
F1	To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.
F2	To obtain F2 subtract naphthalene from the >C10-C16 fraction.
F3	(>C16-C34)
F4	(>C34-C40)

Table T2 - Summary of Groundwater Analytical Results

Sample ID	Sampling Date	Metals								Major Ions						PAHs			BTEX					TRHs				VOCs				Total Phenols	Pesticides		PFAS		
		As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Ca	Mg	Na	K	Cl	SO_4	Total PAHs	Benzo(a)pyrene	Naphthalene	Benzene	Toluene	Ethylbenzene	o-xylene	m/p-xylene	F1	F2	F3	F4	cis-1,2-dichloroethene #	Trichloroethylene (TCE) #	Tetrachloroethene (Perchloroethylene,PCE)	Total VOC		Total OCP	Total OPP	PFOS	PFOS + PFHxS	PFOA
GW_BH1	4/6/2022	<1	<0.1	<1	1	<1	<0.1	4	13	6,700	10,000	23,000	5,200	30,000	17,000	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	170	<60	<500	<500	3.4	120	1	130	<50	<PQL	<PQL	0.008	0.025	0.002
GW_BH2		<1	<0.1	<1	3	<1	<0.1	2	<5	6,100	10,000	34,000	9,100	31,000	48,000	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<0.5	<0.5	<0.5	<10	<50	<PQL	<PQL	0.010	0.043	0.002
GW_BH3		<1	<0.1	<1	2	1	<0.1	7	19	24,000	20,000	110,000	6,600	240,000	45,000	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	72	<500	<500	<0.5	<0.5	<0.5	<10	<50	<PQL	<PQL	<0.002	<0.002	<0.002
Statistical Analysis																																				
Maximum Concentration		<1	<0.1	<1	3	1	<0.1	7	19	24,000	20,000	110,000	9,100	240,000	48,000	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	170	72	<500	<500	3.4	120	1	130	<50	NC	NC	0.010	0.043	0.002
GILs																																				
HSL D - *Commercial / industrial* Soil texture classification – Sand	2m to <4m																	NL	5,000	NL	NL	NL	NL	6,000	NL												
	4m to <8m																	NL	5,000	NL	NL	NL	NL	6,000	NL												
	8m+																	NL	5,000	NL	NL	NL	NL	7,000	NL												
GILs	Fresh Waters [1]	24 (AsIII) 13 (AsV)	0.2	1 [3] (Cr VI)	1.4	3.4	0.06 [2]	11	8 [3]									16	950	180 [4]	80 [4]	350	275 [4]	50 [5]	60 [5]	500 [5]	500 [5]					320		320			320
	Marine Waters [1]		0.7 [2]	27 (Cr III) 4.4 (Cr VI)	1.3	4.4	0.1 [2]	7	15 [3]									50 [3]	500 [3]	180 [4]	5 [4]	350 [4]	275 [4]	50 [5]	60 [5]	500 [5]	500 [5]					400		400			400
	Recreational Water [6]	100	20		1,000 *	100	10	200	3,000*			180,000*		250,000*	250,000*				10	25*	3*	20 *	20 *					600									
NJDEP - Screening Levels [7]																		300											3								
PFAS - Freshwater [8]																																		0.13		220

Notes:

Highlighted indicates criteria exceeded

Highlighted indicates criteria not met

All values are µg/L unless stated otherwise

HSL D NEPC 1999 Amendment 2013 'HSL D' Health Based Screening Levels for vapour intrusion applicable for commercial / industrial settings.

NL Not Limiting

\# Only detected concentrations were tabulated.

F1 To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.

F2 To obtain F2 subtract naphthalene from the >C10-C16 fraction.

F3 (>C16-C34)

F4 (>C34-C40)

1 NEPM (2013) Groundwater Investigation Levels for fresh and marine water quality, based on ANZECC & ARMCANZ (2000).

2 Chemical for which possible bioaccumulation and secondary poisoning effects should be considered, refer to ANZG (2018) for further guidance.

3 Figure may not protect key species from chronic toxicity, refer to ANZECC & ARMCANZ (2000) for further guidance

4 Low reliability toxicity data, refer to ANZECC & ARMCANZ (2000)

5 In lack of a criteria the laboratory PQL has been used (DEC, 2007).

6 Based on NHMRC (2011 - update August 2018 v.3.5) Drinking Water Guidelines. The lowest of the Health Guideline x10 or the Aesthetic Guideline has been chosen as the assessment criteria. Aesthetic based criteria have been indicated by *

7 Value dervied from the NJDEP vapour intrusion groundwater screening levels (GWSL)

8 Value dervied from the National Environmental Management Plan for PFAS - 95% species protection for slightly to moderately disturbed systems.

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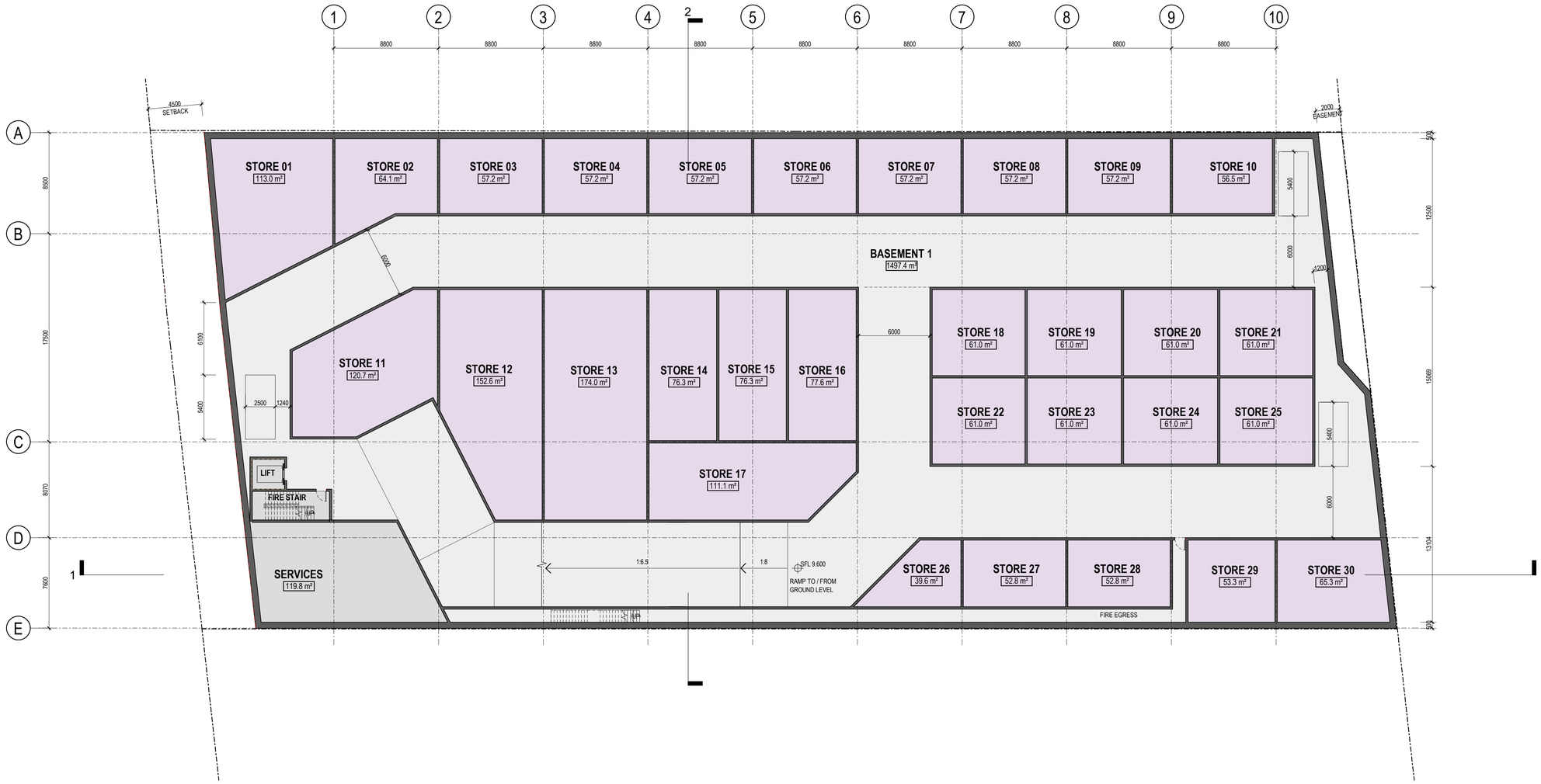
Appendix C – Proposed Development



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PRELIMINARY

Revisions			
P1	05.03.22	For Information	AT

5/03/2022 3:58:36 PM

Level	CARPARKS Total
BASEMENT	3
GROUND	29
LEVEL 1	30
	62

LEVEL	STORAGE UNITS	INDUSTRIAL UNITS	PARKING	No. OF INDUSTRIAL UNITS
BASEMENT	2174.2 m²	0.0 m²	1497.4 m²	0
GROUND	0.0 m²	1744.6 m²	2061.8 m²	17
GROUND MEZZANINE	0.0 m²	535.0 m²	0.0 m²	0
LEVEL 1	0.0 m²	1881.6 m²	1687.5 m²	18
LEVEL 1 MEZZANINE	0.0 m²	568.4 m²	0.0 m²	0
	2174.2 m²	4729.7 m²	5246.7 m²	35

NOTE: AREAS ARE MEASURED TO THE EXTERNAL FACE OF EXTERNAL WALLS AND CENTRE LINE OF PARTI WALLS

Project: **101 - 105 Old Pittwater Road**
101 - 105 Old Pittwater Road
Brookvale

Drawing: **Basement**

Project No: **222008**

Author: **AT**

Scale: @ A1 **1 : 200**

Drawing No.: **SK01.01**

Revision: **P1**

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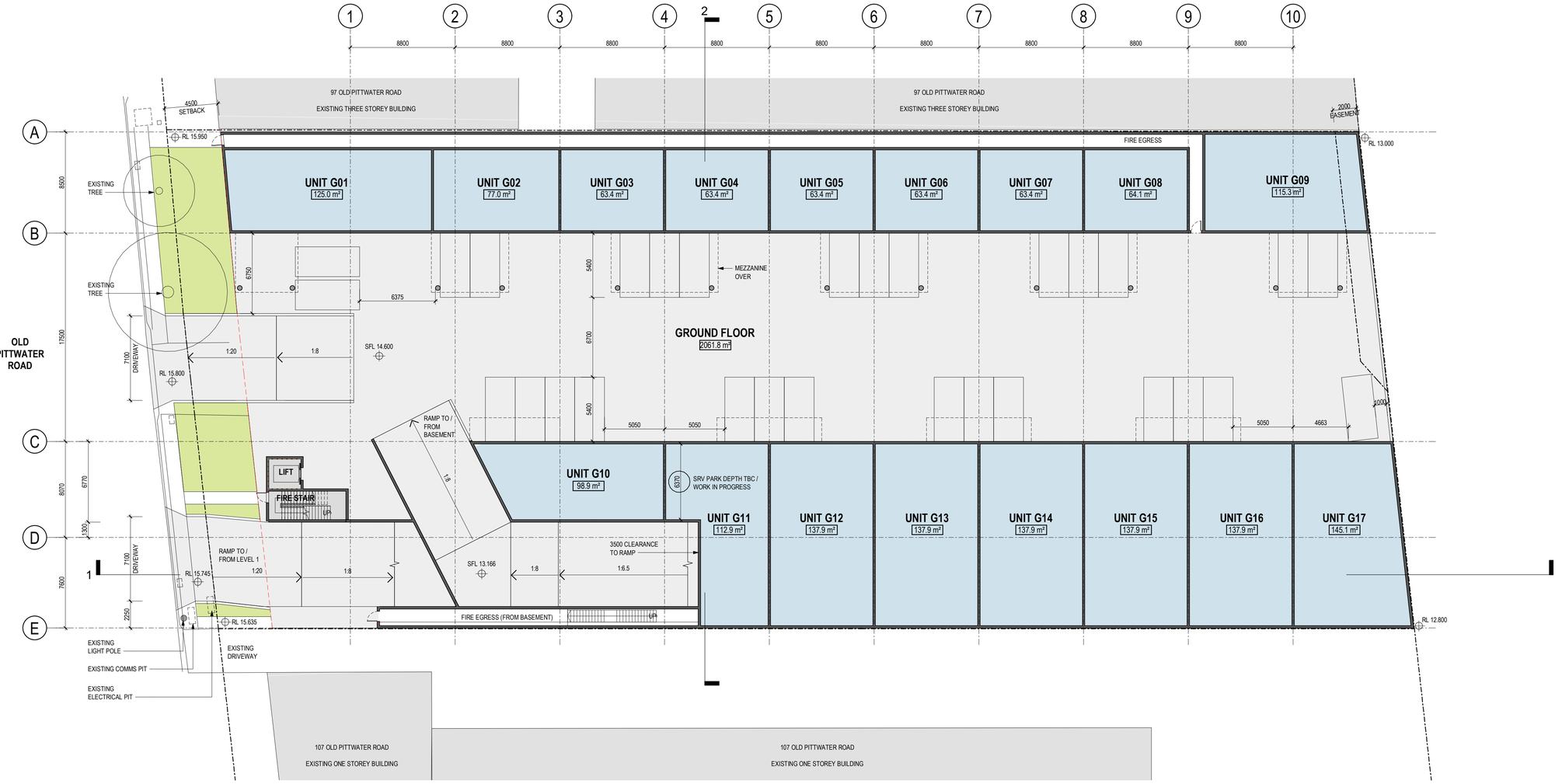

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GROUND	29
LEVEL 1	30
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LEVEL	STORAGE UNITS	INDUSTRIAL UNITS	PARKING	No. OF INDUSTRIAL UNITS
BASEMENT	2174.2 m²	0.0 m²	1497.4 m²	0
GROUND	0.0 m²	1744.6 m²	2061.8 m²	17
GROUND MEZZANINE	0.0 m²	535.0 m²	0.0 m²	0
LEVEL 1	0.0 m²	1881.6 m²	1687.5 m²	18
LEVEL 1 MEZZANINE	0.0 m²	568.4 m²	0.0 m²	0
	2174.2 m²	4729.7 m²	5246.7 m²	35

NOTE: AREAS ARE MEASURED TO THE EXTERNAL FACE OF EXTERNAL WALLS AND CENTRE LINE OF PARTI WALLS

Project: **101 - 105 Old Pittwater Road**
101 - 105 Old Pittwater Road
Brookvale

Drawing: **Ground Floor**

Project No: **222008**

Author: **AT**

Scale: @ A1 **1 : 200**

Drawing No: **SK01.02**

Revision: **P1**

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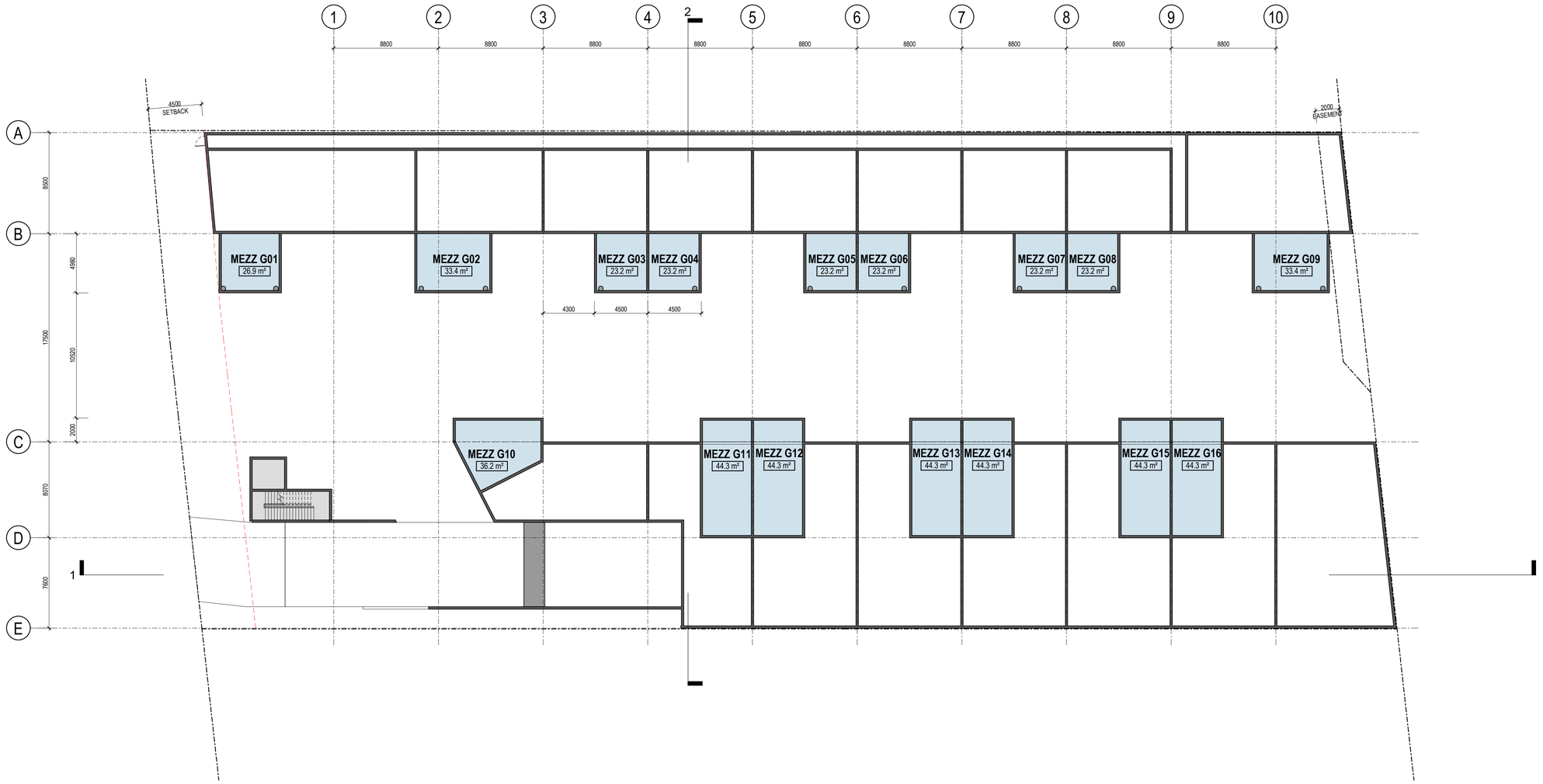

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GROUND	0.0 m²	1744.6 m²	2061.8 m²	17
GROUND MEZZANINE	0.0 m²	535.0 m²	0.0 m²	0
LEVEL 1	0.0 m²	1881.6 m²	1687.5 m²	18
LEVEL 1 MEZZANINE	0.0 m²	568.4 m²	0.0 m²	0
	2174.2 m²	4729.7 m²	5246.7 m²	35

NOTE: AREAS ARE MEASURED TO THE EXTERNAL FACE OF EXTERNAL WALLS AND CENTRE LINE OF PARTI WALLS

Project: **101 - 105 Old Pittwater Road**
101 - 105 Old Pittwater Road
Brookvale

Drawing: **Ground Mezzanine**

Project No: **222008**

Author: **AT**

Scale: @ A1: **1 : 200**

Drawing No.: **SK01.03**

Revision: **P1**

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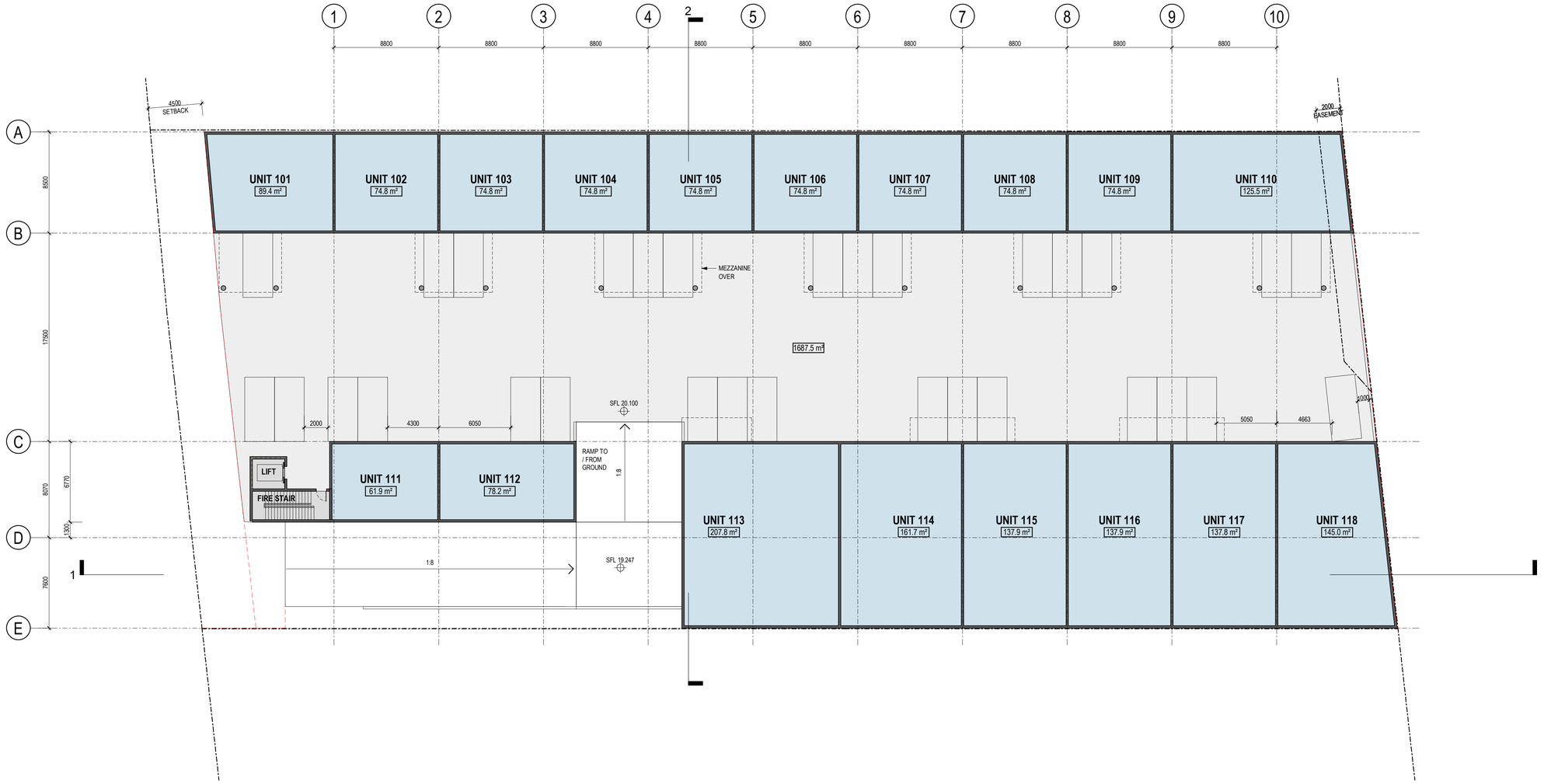

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GROUND	29
LEVEL 1	30
	62

LEVEL	STORAGE UNITS	INDUSTRIAL UNITS	PARKING	No. OF INDUSTRIAL UNITS
BASEMENT	2174.2 m²	0.0 m²	1497.4 m²	0
GROUND	0.0 m²	1744.6 m²	2061.8 m²	17
GROUND MEZZANINE	0.0 m²	535.0 m²	0.0 m²	0
LEVEL 1	0.0 m²	1881.6 m²	1687.5 m²	18
LEVEL 1 MEZZANINE	0.0 m²	568.4 m²	0.0 m²	0
	2174.2 m²	4729.7 m²	5246.7 m²	35

NOTE: AREAS ARE MEASURED TO THE EXTERNAL FACE OF EXTERNAL WALLS AND CENTRE LINE OF PARTI WALLS

Project: **101 - 105 Old Pittwater Road**
101 - 105 Old Pittwater Road
Brookvale

Drawing: **Level 1**

Project No: **222008**

Author: **AT**

Scale: @ A1 **1 : 200**

Drawing No.: **SK01.04**

Revision: **P1**

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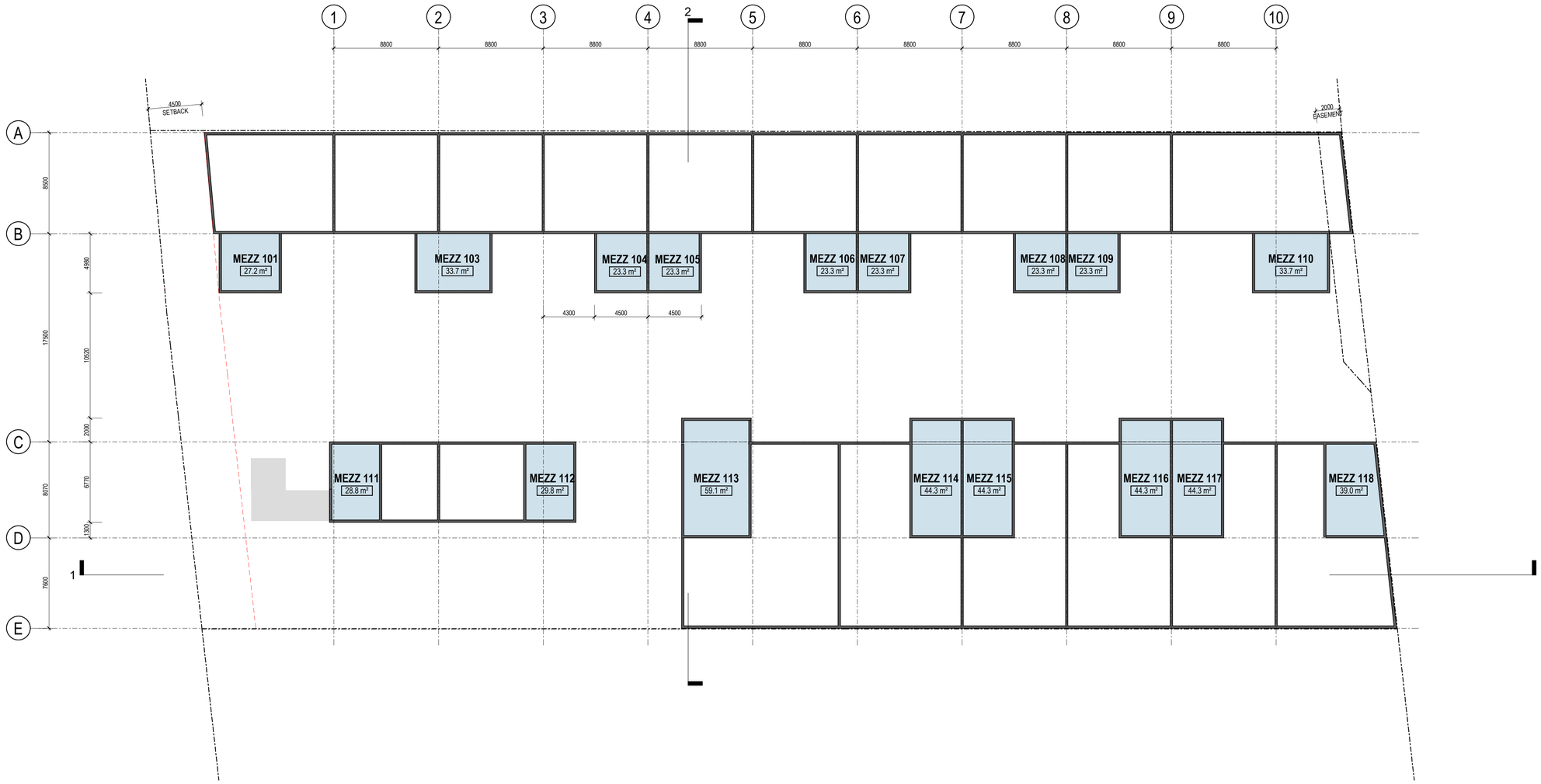

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Revisions			
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LEVEL	STORAGE UNITS	INDUSTRIAL UNITS	PARKING	No. OF INDUSTRIAL UNITS
BASEMENT	2174.2 m²	0.0 m²	1497.4 m²	0
GROUND	0.0 m²	1744.6 m²	2061.8 m²	17
GROUND MEZZANINE	0.0 m²	535.0 m²	0.0 m²	0
LEVEL 1	0.0 m²	1881.6 m²	1687.5 m²	18
LEVEL 1 MEZZANINE	0.0 m²	568.4 m²	0.0 m²	0
	2174.2 m²	4729.7 m²	5246.7 m²	35

NOTE: AREAS ARE MEASURED TO THE EXTERNAL FACE OF EXTERNAL WALLS AND CENTRE LINE OF PARTI WALLS

Project: **101 - 105 Old Pittwater Road**
101 - 105 Old Pittwater Road
Brookvale

Drawing: **Level 1 Mezzanine**

Project No: **222008**

Author: **AT**

Scale: @ A1: **1 : 200**

Drawing No.: **SK01.05**

Revision: **P1**

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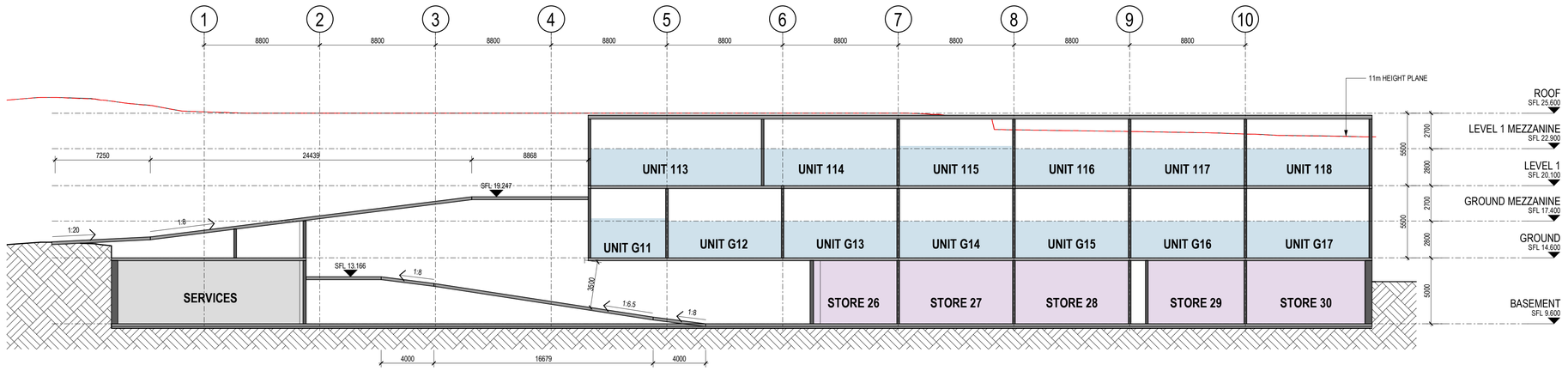
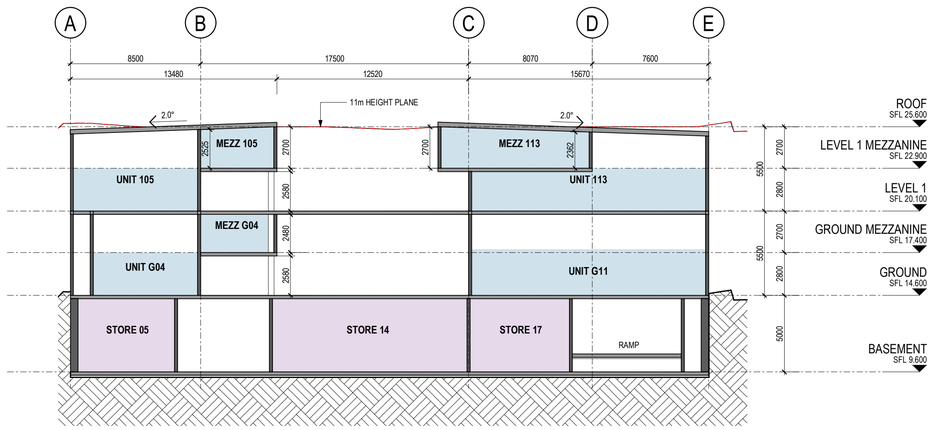


SECTION 1



SECTION 2

DRAFT

PRELIMINARY

Revisions				
P1	05.03.22	For Information		AT

5/03/2022 3:58:50 PM

Project: **101 - 105 Old Pittwater Road**
101 - 105 Old Pittwater Road
Brookvale

Drawing: **Sections**
Project No: **222008**
Author: **AT**
Scale: @ A1 **1 : 200**
Drawing No: **SK03.01**
Revision: **P1**

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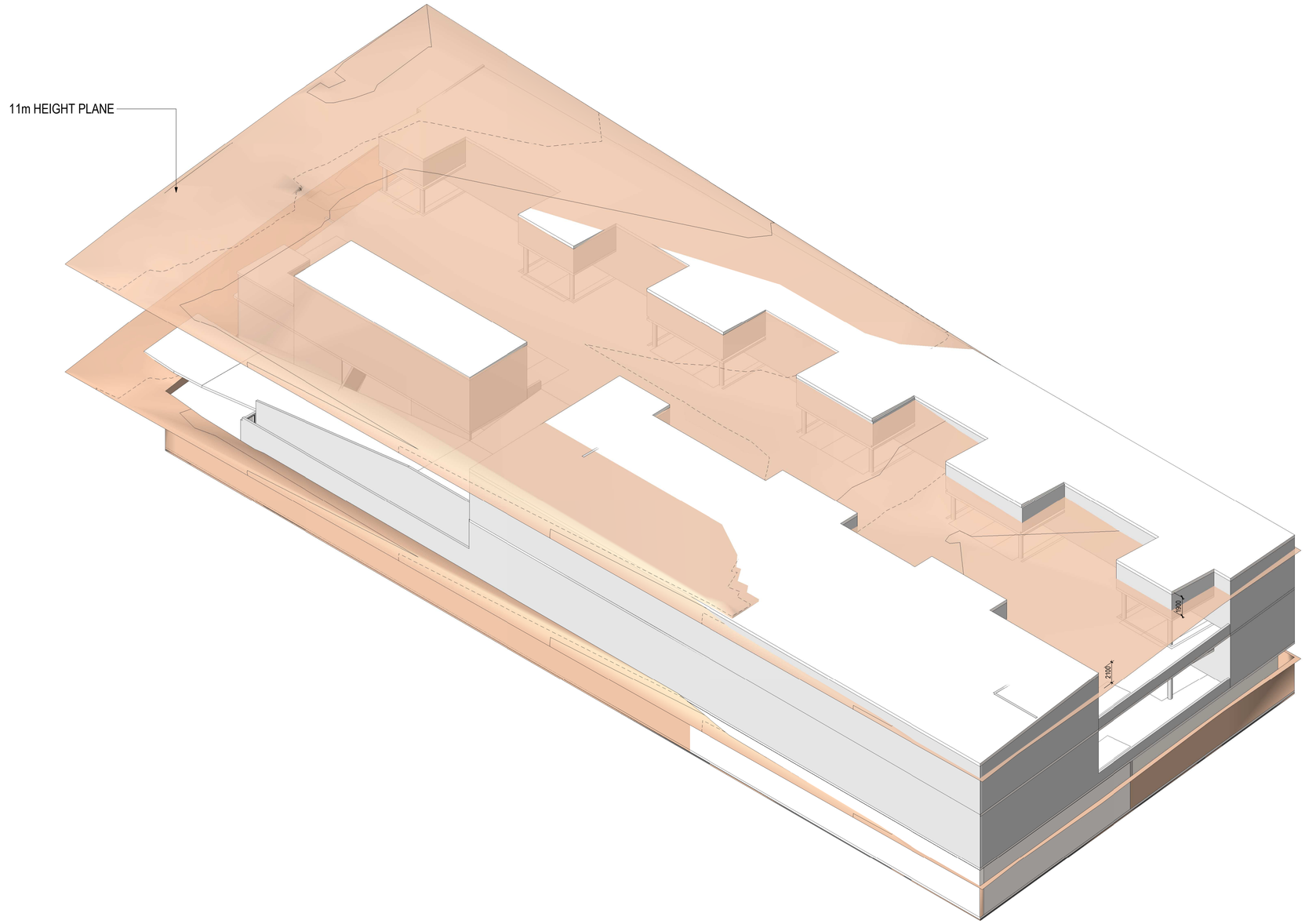

DRAFT

PRELIMINARY

Revisions				
P1	05.03.22	For Information		AT

5/03/2022 3:58:54 PM

Project: **101 - 105 Old Pittwater Road**
101 - 105 Old Pittwater Road
Brookvale

Drawing: **Height Plane Diagram**

Project No: **222008**

Author: **KW**

Scale: @ A1

Drawing No: **SK06.01**

Revision: **P1**

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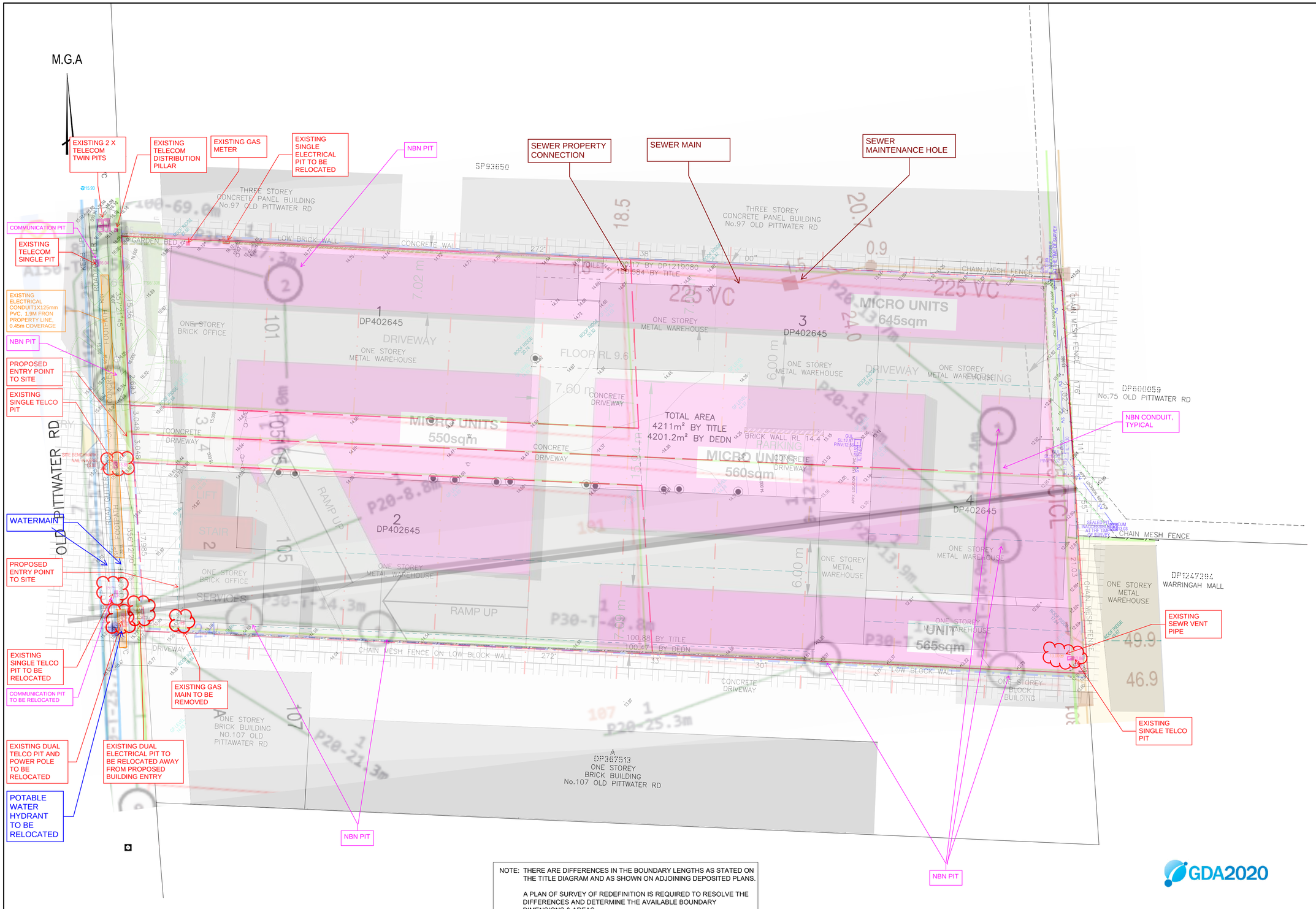

NOTE: THERE ARE DIFFERENCES IN THE BOUNDARY LENGTHS AS STATED ON THE TITLE DIAGRAM AND AS SHOWN ON ADJOINING DEPOSITED PLANS.

A PLAN OF SURVEY OF REDEFINITION IS REQUIRED TO RESOLVE THE DIFFERENCES AND DETERMINE THE AVAILABLE BOUNDARY DIMENSIONS & AREAS

FOR CLARITY THIS PLAN CONTAINS FURTHER SURVEY INFORMATION THAT IS NOT SHOWN ON THE PRINTOUT BUT IS CONTAINED WITHIN THE AUTOCAD FILE

GDA2020

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CLIENT

HANNAS CONTRACTING SERVICES PTY LTD

PROJECT

DETAIL SURVEY
OF
LOTS 1-4 IN DP402645
BEING 101-105
OLD PITTWATER ROAD,
BROOKVALE

NOTES

Tree sizes are estimates only.

Only visible services have been located in this survey.

Service and utilities shown on plan have been located by physical evidence on site only and may not have been opened to verify the type of utility. Neither excavation nor potholing have been carried out to confirm underground location. Service details should be confirmed with the relevant service authority during design and prior to any construction.

All dimensions must be verified on site prior to any construction.

The position of surveyed data has been located and is shown to topographic accuracies. If clearances to boundaries or other features are critical and dimensions are not shown further survey may be required.

The title boundaries shown hereon were not marked at the time of survey and have been determined by plan dimensions only and not by field survey.

Any construction on or near boundaries will require further survey in order that marks defining boundaries can be placed.

1	OV	2/02/2022	INITIAL ISSUE

SYM	DESCRIPTION
	AUSPOST BOX
	BENCHMARK
	BIN
	BOLLARD
	BOREHOLE
	BUS STOP SIGN
	FLAG POLE
	GATE
	MAIL BOX
	SEAT
	UNKNOWN SERVICE
	DRAINAGE GULLY PIT
	DRAINAGE MANHOLE
	ELEC FUSE BOX
	ELEC GARDEN LIGHT
	ELEC GREEN PILLAR
	ELEC LIGHT POLE
	ELEC POLE & LIGHT
	ELEC POLE&TRANSFORMER
	ELEC POWER POLE
	ELEC SINGLE PIT
	ELEC STAY POLE
	ELEC TWIN PIT
	FUEL DIP

SYM	DESCRIPTION
	GAS MAIN
	GAS METER
	GAS VALVE
	SEWER LAMPHOLE
	SEWER MANHOLE
	SEWER VENT PIPE
	OPTICAL FIBRE MARKER
	OPTICAL FIBRE PIT
	TELECOM DIST PILLAR
	TELECOM POLE
	TELECOM SINGLE PIT
	TELECOM TWIN PIT
	TRAFFIC JUNCTION BOX
	TRAFFIC LIGHT
	TRAFFIC SIGN
	TRAF SIGNAL CONTROLLER
	SHRUB
	TREE
	WATER AIR VALVE
	WATER HYDRANT
	WATER METER
	WATER PUMP
	WATER STOP VALVE
	WATER TAP

Symbols shown are indicative only. The symbol size and orientation does not necessarily represent the real size or orientation of the feature.

DRAINAGE PIPE U/G	SW SW SW SW
DRAIN	D D D D
ELEC CABLE A/G	
ELEC CABLE U/G	E E E E
GAS PIPE	GAS GAS GAS GAS
FENCE LINE	
SEWERAGE PIPE	S S S S
TELSTRA CABLE	T T T T
WATER PIPE	W W W W

LANDPARTNERS Surveyors and Planners

ISO 9001 Quality Management

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w: www.landpartners.com.au

HEIGHT DATUM: AHD	LOCAL AUTHORITY: WARRINGAH
HEIGHT ORIGIN: SSM19744 RL15.53	SCALE: 1:200 @ A1
MERIDIAN: MGA ZONE 56	CONTOUR INTERVAL: 0.2 Metre
CO-ORD SYSTEM: MGA2020	SURVEYOR: OV — DATE OF SURVEY: 21/01/2022
CCAD FILE: 75462 DETAILS	DRAWN: JL — DATE: 3/02/2022
AUTOCAD FILE: SY075462.000.4.1	CHECKED: OV — DATE: 3/02/2022
ARCHIVE FILE: N/A	APPROVED: RL — DATE: 3/02/2022
PLAN NUMBER: SY075462.000.4	REVISION: 1

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Appendix D – Site Photographs

Photograph 1: Central portion of the site, fronting east.

Photograph 2: Garage from the roller door (proximity to BH4).

Photograph 3: Storage area within stone worker warehouse and associated showrooms.

Photograph 4: Southern portion of the site, proximity to BH6.

Photograph 5: Equipment storage within garage (proximity to BH4).

Photograph 6: The eastern portion of the site (set back area, in proximity to BH7).

Photograph 7: The western portion of the site (set back area, in proximity to BH2).

Appendix E – Borehole Logs

BOREHOLE: BH1

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	101-105 Old Pittwater Road, Brookvale, NSW		
Position	Refer to Figure 2	Contractor	Geosense Drilling & Engineering Pty Ltd
Job No.	E25568.E02	Drill Rig	Comacchio Geo 205
Client	Hannas Contracting Services	Inclination	-90°

Sheet	1 OF 1
Date Started	21/5/22
Date completed	21/5/22
Logged	SR
Checked	

Drilling					Sampling		Field Material Description						
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD	-	▽	0	0.17				-	CONCRETE: 170 mm thickness.			BH1
					BH1_0.3-0.4 PID=0.3ppm			-	FILL: SAND; fine to medium grained,well graded, dark brown, no odour.			Grout
				0.90								
			1		BH1_1.0-1.1 PID=0.3ppm			CI-CH	Silty CLAY;low plasticity, dark brown, with fine gravels , no odour.	S - M		Bentonite uPVC 50 mm Casing
			2									
				2.50	BH1_2.5-2.6 PID=0.2ppm			S	SAND: Fine to medium grained, well graded, brown to light grey, no odour.		-	
			3									Sand
			4							W		uPVC 50 mm Screen
				4.50								
			5									Colapse sand Sand
			6						Hole Terminated at 5.50 mBGL; Target depth reached			

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

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BOREHOLE: BH2

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	101-105 Old Pittwater Road, Brookvale, NSW		
Position	Refer to Figure 2	Contractor	Geosense Drilling & Engineering Pty Ltd
Job No.	E25568.E02	Drill Rig	Comacchio Geo 205
Client	Hannas Contracting Services	Inclination	-90°

Sheet	1 OF 1
Date Started	21/5/22
Date completed	21/5/22
Logged	SR
Checked	

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
HA	-	▽	0	0.30	BH2_0.2-0.3 PID=0ppm			-	BRICK: 40 mm thickness.	-	-	BH2
									FILL: Gravelly SAND; fine to medium grained, well sorted, dark grey, with sub-angular gravels, no odour.			
					BH2_0.5-0.6 PID=0ppm			-	FILL: SAND; fine to medium grained, dark grey, no odour.			
			1	1.00					From 1.0m, colour change to light brown.		L	Grout
					BH2_1.5-1.6 PID=0.1ppm							
			2									uPVC 50 mm Casing
					BH2_2.5-2.6 PID=0.1ppm							
AD				2.90				CLS	Sandy CLAY: Low to medium plasticity, orange to brown, with fine to medium grained sand, no odour.	-		Bentonite
			3		BH2_3.6-3.7 PID=0.1ppm							
			4									
			5								F	Sand
			6									uPVC 50 mm Screen
			7	7.00					Hole Terminated at 7.00 mBGL; Target depth reached			

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

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BOREHOLE: BH3

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	101-105 Old Pittwater Road, Brookvale, NSW		
Position	Refer to Figure 2	Contractor	Geosense Drilling & Engineering Pty Ltd
Job No.	E25568.E02		
Client	Hannas Contracting Services	Drill Rig	Comacchio Geo 206
		Inclination	-90°

Sheet	1 OF 1
Date Started	28/5/22
Date completed	28/5/22
Logged	SR
Checked	

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
HA	-	▽	0					-	BRICK: 40 mm thickness.			BH3
				0.30	BH3_0.2-0.3 QD1/QT1 PID=0.3ppm			-	FILL: SAND; fine to medium grained, black, with organic matter and black rootlet, no odour.			
									FILL: SAND; fine to medium grained, orange, no odour.			
			1		BH3_1.0-1.1 PID=0.4ppm				From 0.3m, colour change to light grey/brown, with rootlets.			Grout
			2		BH3_2.0-2.1 PID=0.4ppm					D		uPVC 50 mm Casing
AD			3	3.00	BH3_3.0-3.1 PID=0.3ppm			CLS	Sandy CLAY: Low plasticity, brown/red, no odour.		-	Bentonite
			4		BH3_4.0-4.1					M		
			5									Sand
			6									uPVC 50 mm Screen
			7	7.20								Colapse sand Sand
									Hole Terminated at 7.20 mBGL; Target depth reached			

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

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BOREHOLE: BH4

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation		
Location	101-105 Old Pittwater Road, Brookvale, NSW		
Position	Refer to Figure 2		
Job No.	E25568.E02	Contractor	-
Client	Hannas Contracting Services	Drill Rig	Hand Auger
		Inclination	-90°

Sheet	1 OF 1
Date Started	28/5/22
Date Completed	28/5/22
Logged	SR
Checked	

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC			0.0					-	CONCRETE: 430 mm thickness.		-	CONCRETE HARDSTAND
				0.43								
HA	-	GWNE	0.5		BH4_0.43-0.58 PID=0.3ppm			-	FILL: SAND; fine to medium grained, light grey, no odour.	D	L	FILL
					BH4_0.63-0.78 PID=0.4ppm							
				0.78				-	FILL: Silty SAND; fine to medium grained, light brown/red, no odour.			
			1.0	1.10				S	SAND: Fine to medium grained, brown, no odour.		MD	NATURAL
					BH4_1.2-1.3 PID=0.3ppm							
			1.5	1.50					Hole Terminated at 1.50 mBGL; Target depth reached			
			2.0									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

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BOREHOLE: BH5

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Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	101-105 Old Pittwater Road, Brookvale, NSW			Date Started	28/5/22
Position	Refer to Figure 2			Date Completed	28/5/22
Job No.	E25568.E02	Contractor	-	Logged	SR
Client	Hannas Contracting Services	Drill Rig	Hand Auger	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC			0.0	0.10				-	CONCRETE: 100 mm thickness.		-	CONCRETE HARDSTAND
HA	-	GWNE			BH5_0.2-0.3 PID=0.2ppm			-	FILL: SAND; fine to medium grained, dark grey, no odour.	-	L	FILL
				0.30					From 0.3m, colour change to light grey.			
			0.5	0.50				-	FILL: Silty SAND; fine to medium grained, brown/red/ yellow, no odour.			
			1.0		BH5_1.0-1.1 PID=0.1ppm						MD	
			1.5									
			2.0		BH5_2.0-2.1 PID=0ppm							
				2.20					From 2.2m, colour change yellow.			
				2.30								
					BH5_2.3-2.4 PID=0ppm			SM	Silty SAND; Fine to medium grained, light grey/ white, no odour.			RESIDUAL SOIL
			2.5	2.60								
									Hole Terminated at 2.60 mBGL; Target depth reached			
			3.0									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

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BOREHOLE: BH6

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Project	Detailed Site Investigation			Sheet	1 OF 1
Location	101-105 Old Pittwater Road, Brookvale, NSW			Date Started	28/5/22
Position	Refer to Figure 2			Date Completed	28/5/22
Job No.	E25568.E02	Contractor	-	Logged	SR
Client	Hannas Contracting Services	Drill Rig	Hand Auger	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
CC			0.0	*0.09*				-	CONCRETE: 90mm thickness.			CONCRETE HARDSTAND
HA	-	GWNE			BH6_0.2-0.3 PID=0.4ppm			-	FILL: Gravelly SAND; fine to medium grained, dark brown, with sub-angular to angular siltstone gravels, no odour.	-	-	FILL
				0.40					Hole Terminated at 0.40 mBGL; Refusal on Sandstone Gravels			
			0.5									
			1.0									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

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BOREHOLE: BH7

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Project	Detailed Site Investigation			Sheet	1 OF 1
Location	101-105 Old Pittwater Road, Brookvale, NSW			Date Started	28/5/22
Position	Refer to Figure 2			Date Completed	28/5/22
Job No.	E25568.E02	Contractor	-	Logged	SR
Client	Hannas Contracting Services	Drill Rig	Hand Auger	Checked	
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0					-	FILL: Silty SAND; fine grained, black, with sub-angular gravels, with rootlets and plastic, no odour.			FILL / TOPSOIL
				0.05				-	FILL: Gravelly SAND; fine to medium grianed, dark grey, with sub-angular gravels, with rootlets and plastic, no odour.			FILL
HA	-	GWNE			BH7_0.1-0.2 PID=0.2ppm					-	L	
				0.25					Hole Terminated at 0.25 mBGL; Refusal on Gravels			
			0.5									
			1.0									

This borehole log should be read in conjunction with EI Australia's accompanying standard notes.

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EXPLANATION OF NOTES, ABBREVIATIONS & TERMS USED ON BOREHOLE AND TEST PIT LOGS

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DRILLING/EXCAVATION METHOD

HA	Hand Auger	RD	Rotary blade or drag bit	NQ	Diamond Core - 47 mm
DTC	Diatube Coring	RT	Rotary Tricone bit	NMLC	Diamond Core - 52 mm
NDD	Non-destructive digging	RAB	Rotary Air Blast	HQ	Diamond Core - 63 mm
AS*	Auger Screwing	RC	Reverse Circulation	HMLC	Diamond Core - 63mm
AD*	Auger Drilling	PT	Push Tube	BH	Tractor Mounted Backhoe
*V	V-Bit	CT	Cable Tool Rig	EX	Tracked Hydraulic Excavator
*T	TC-Bit, e.g. ADT	JET	Jetting	EE	Existing Excavation
ADH	Hollow Auger	WB	Washbore or Bailer	HAND	Excavated by Hand Methods

PENETRATION/EXCAVATION RESISTANCE

L **Low resistance.** Rapid penetration/ excavation possible with little effort from equipment used.

M **Medium resistance.** Penetration/ excavation possible at an acceptable rate with moderate effort from equipment used.

H **High resistance.** Penetration/ excavation is possible but at a slow rate and requires significant effort from equipment used.

R **Refusal/ Practical Refusal.** No further progress possible without risk of damage or unacceptable wear to equipment used.

These assessments are subjective and are dependent on many factors, including equipment power and weight, condition of excavation or drilling tools and experience of the operator.

WATER

Water level at date shown

Water inflow

Partial water loss

Complete water loss

GROUNDWATER NOT OBSERVED — Observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave-in of the borehole/ test pit.

GROUNDWATER NOT ENCOUNTERED — Borehole/ test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/ test pit been left open for a longer period.

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following 150mm
seating 30/80mm	Where practical refusal occurs, the blows and penetration for that interval are reported
RW	Penetration occurred under the rod weight only
HW	Penetration occurred under the hammer and rod weight only
HB	Hammer double bouncing on anvil
Sampling	
DS	Disturbed Sample
BDS	Bulk disturbed Sample
GS	Gas Sample
WS	Water Sample
U63	Thin walled tube sample - number indicates nominal sample diameter in millimetres
Testing	
FP	Field Permeability test over section noted
FVS	Field Vane Shear test expressed as uncorrected shear strength (sv = peak value, sr = residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket Penetrometer test expressed as instrument reading in kPa
WPT	Water Pressure tests
DCP	Dynamic Cone Penetrometer test
CPT	Static Cone Penetration test
CPTu	Static Cone Penetration test with pore pressure (u) measurement

RANKING OF VISUALLY OBSERVABLE CONTAMINATION AND ODOUR (for specific soil contamination assessment

R = 0	No visible evidence of contamination	R = A	No non-natural odours identified
R = 1	Slight evidence of visible contamination	R = B	Slight non-natural odours identified
R = 2	Visible contamination	R = C	Moderate non-natural odours identified
R = 3	Significant visible contamination	R = D	Strong non-natural odours identified

ROCK CORE RECOVERY

TCR = Total Core Recovery (%)

$$= \frac{\text{Length of core recevered}}{\text{Lengh of core run}} \text{ x } 100$$

SCR = Solid Core Recovery (%)

$$= \frac{\Sigma \text{ Length ofcylindrical core recevered}}{\text{Lengh of core run}} \text{ x } 100$$

RQD = Rock Quality Designation (%)

$$= \frac{\Sigma \text{Axial Lenghts of core} > 100\text{mm}}{\text{Lengh of core run}} \text{ x } 100$$

MATERIAL BOUNDARIES

———— = inferred boundary

- - - - - - - - = probable boundary

— ?— ?— ?— ?— ? = possible boundary

METHOD OF SOIL DESCRIPTION USED ON BOREHOLE AND TEST PIT LOGS

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FILL	ORGANIC SOILS (OL, OH or Pt)	CLAY (CL, CI or CH)
COUBLES or BOULDERS	SILT (ML or MH)	SAND (SP or SW)
GRAVEL (GP or GW)	Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay	

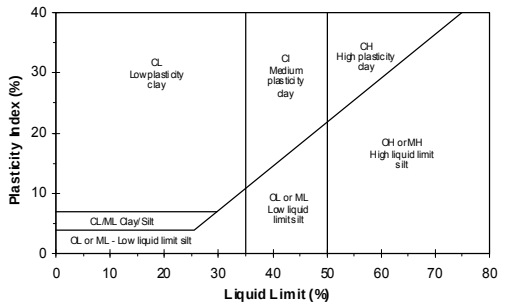
CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS1726 – 1993, (Amdt1 – 1994 and Amdt2 – 1994), Appendix A. Material properties are assessed in the field by visual/tactile methods.

PARTICLE SIZE CHARACTERISTICS

Major Division	Sub Division	Particle Size
BOULDERS		>200 mm
COBBLES		63 to 200 mm
GRAVEL	Coarse	20 to 63 mm
	Medium	6 to 20 mm
	Fine	2 to 6 mm
SAND	Coarse	0.6 to 2 mm
	Medium	0.2 to 0.6 mm
	Fine	0.075 to 0.2mm
SILT		0.002 to 0.075 mm
CLAY		<0.002 mm

PLASTICITY PROPERTIES



USCS SYMBOLS

Major Divisions		Symbol	Description
COARSE GRAINED SOILS More than 50% by dry mass less than 63mm is greater than 0.075mm	More than 50% of coarse grains are >2.36mm	GW	Well graded gravel and gravel-sand mixtures, little or no fines.
		GP	Poorly graded gravel and gravel-sand mixtures, little or no fines.
		GM	Silty gravel, gravel-sand-silt mixtures.
		GC	Clayey gravel, gravel-sand-clay mixtures.
	More than 50% of coarse grains are <2.36mm	SW	Well graded sand and gravelly sand, little or no fines.
		SP	Poorly graded sand and gravelly sand, little or no fines.
		SM	Silty sand, sand-silt mixtures.
		SC	Clayey sand, sandy-clay mixtures.
FINE GRAINED SOILS More than 50% by dry mass less than 63mm is less than 0.075mm	Liquid Limit less < 50%	ML	Inorganic silts of low plasticity, very fine sands, rock flour, silty or clayey fine sands.
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
		OL	Organic silts and organic silty clays of low plasticity.
	Liquid Limit > than 50%	MH	Inorganic silts of high plasticity.
		CH	Inorganic clays of high plasticity.
		OH	Organic clays of medium to high plasticity.
		PT	Peat muck and other highly organic soils.

MOISTURE CONDITION

Symbol	Term	Description
D	Dry	Sands and gravels are free flowing. Clays & Silts may be brittle or friable and powdery.
M	Moist	Soils are darker than in the dry condition & may feel cool. Sands and gravels tend to cohere.
W	Wet	Soils exude free water. Sands and gravels tend to cohere.

Moisture content of cohesive soils may also be described in relation to plastic limit (WP) or liquid limit (WL) [» much greater than, > greater than, < less than, « much less than].

CONSISTENCY

Symbol	Term	Undrained Shear Strength
VS	Very Soft	0. to 12 kPa
S	Soft	12 to 25 kPa
F	Firm	25 to 50 kPa
St	Stiff	50 to 100 kPa
VSt	Very Stiff	100 to 200 kPa
H	Hard	Above 200 kPa

DENSITY

Symbol	Term	Density Index %	SPT "N" #
VL	Very Loose	< 15	0 to 4
L	Loose	15 to 35	4 to 10
MD	Medium Density	35 to 65	10 to 30
D	Dense	65 to 85	30 to 50
VD	Very Dense	Above 85	Above 50

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.
SPT correlations are not stated in AS1726 – 1993, and may be subject to corrections for overburden pressure and equipment type.

MINOR COMPONENTS

Term	Assessment Guide	Proportion by Mass
Trace	Presence just detectable by feel or eye but soil properties little or no different to general properties of primary component	Coarse grained soils: ≤ 5% Fine grained soil: ≤15%
Some	Presence easily detectable by feel or eye but soil properties little or no different to general properties of primary component	Coarse grained soils: 5 - 12% Fine grained soil: 15 - 30%

Appendix F – Calibration Form and Field Data Sheets

WATER SAMPLING FIELD SHEET

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Site Address: 01-105 Old Pittwater Rd, Brookvale	Job Number: E255(
Client: Hannas	Date: 4/6/2022
Field Staff: Sergio Raposeira	Sampling Location ID: BH02
Well Location: Well located onsite refer to site plans	Round No: 1
MEDIUM XGroundwater ☐Surface Water	☐Stormwater ☐Other:
SAMPLING POINT INFO	
Well Installation Date: 28/May/2022	Stick up / down (m): -0.1 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC): 4 – 7
Previous Sampling Date: N/A	Previous SWL (mBTOC): -
PID READINGS	
PID Headspace (ppm): 0.3	PID Background (ppm): 0.0
PID Breathing Space (ppm): 0.0	
PRE PURGE	
Total Well Depth (mBTOC): 6.89	Well Head Condition: Good
SWL (mBTOC): 4.07	Water Column (m):
PHASE SEPARATED HYDROCARBONS (PSH)	
Depth to PSH (mBTOC): ND	PSH Visually Confirmed (Bailer): ND
PSH Thickness (mm): ND	
Field Filtered	
Yes (0.45 µm) ☒	No ☐ (Request lab 0.45 µm filter the sample)
PURGE AND SAMPLE	
Sampling Method ☐Bladder X Peristaltic	☐Submersible ☐Other:
Depth of Pump Inlet (mBTOC): + 0.5 from base	Fill Timer: N/A
Pump Pressure Regulator (psi): N/A	Discharge Timer:
Weather Conditions: fine / clear	Cycle: N/A
Pump on time:	Pump off time:
WATER QUALITY PARAMETERS	
Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
8:59	0.5	4.08	20.54	336	140.5	0.34	4.54	slight turbid; light orange; no odour
9:02		-	20.41	330	166.5	0.47	4.04	low turb; light orange; no odour
9:05		4.13	20.22	334	164.0	0.45	4.08	↓
9:08		-	20.15	336	163.1	0.49	4.10	↓
9:11		4.15	19.94	333	161.7	0.42	4.08	↓
9:16			20.01	331	164.1	0.39	4.09	↓
9:19		4.15	19.98	331	165.0	0.35	4.06	↓
					Sample			
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

silt at base

flow rate = 0.2 L/min

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 01-105 Old Pittwater Rd, Brookvale	Job Number: E255(
Client: Hannas	Date: 4/6/2022
Field Staff: Sergio Raposeira	Sampling Location ID BHW1
Well Location: Well located onsite refer to site plans	Round No: 1

MEDIUM XGroundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date: 28/May/2022	Stick up / down (m): -0.1 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC): 1.5 - 4.5
Previous Sampling Date: N/A	Previous SWL (mBTOC):

PID READINGS

PID Headspace (ppm): 2.7	PID Background (ppm): 0.0
PID Breathing Space (ppm): 0.0	

PRE PURGE

Total Well Depth (mBTOC): 4.5	Well Head Condition: Good
SWL (mBTOC): 2.33 TOC	Water Column (m):

PHASE SEPARATED HYDROCARBONS (PSH)

Depth to PSH (mBTOC):	PSH Visually Confirmed (Bailer):
PSH Thickness (mm): /	←

Field Filtered

Yes (0.45 µm) ☐ No ☐ (Request lab 0.45 µm filter the sample)

PURGE AND SAMPLE

Sampling Method ☐Bladder X Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC):	Fill Timer: N/A
Pump Pressure Regulator (psi): N/A	Discharge Timer:
Weather Conditions:	Cycle: N/A
Pump on time:	Pump off time:

WATER QUALITY PARAMETERS

Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
7:35	0.5	2.41	19.22	856	-1.1	3.40	7.51	light orange; minor turb; NOC
7:37		↓	19.09	627	52.8	1.27	6.04	↓
7:39		↓	19.02	551		1.31	5.72	clear; as above
7:41		2.40	19.04	478	91.9	1.35	5.39	
7:43		2.41	19.07	409	105.4	1.34	5.41	
7:45		2.41	19.09	411	110.7	1.35	5.40	
			→	→	sample		←	
Stabilisation range: 3 consecutive readings			**±0.2°C**	**±3%**	**±20mV**	**±10%**	**±0.2**	

OTHER COMMENTS/OBSERVATIONS:

QC1

flow rate = 0.2 L/min

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 01-105 Old Pittwater Rd, Brookvale	Job Number: E255(
Client: Hannas	Date: 4/6/2022
Field Staff: Sergio Raposeira	Sampling Location ID: GW BH3
Well Location: Well located onsite refer to site plans	Round No: 1

MEDIUM XGroundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date: 28/May/2022	Stick up / down (m): -0.1 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC): 3.9 - 6.9
Previous Sampling Date: N/A	Previous SWL (mBTOC):

PID READINGS

PID Headspace (ppm): 0.7	PID Background (ppm): 0.0
PID Breathing Space (ppm): 0.0	

PRE PURGE

Total Well Depth (mBTOC): 6.78	Well Head Condition: Good
SWL (mBTOC): 4.10	Water Column (m):

PHASE SEPARATED HYDROCARBONS (PSH)

Depth to PSH (mBTOC): ND	PSH Visually Confirmed (Bailer): ND
PSH Thickness (mm): ND	

Field Filtered

Yes (0.45 µm) ☒ No ☐ (Request lab 0.45 µm filter the sample)

PURGE AND SAMPLE

Sampling Method ☐Bladder X Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC):	Fill Timer: N/A
Pump Pressure Regulator (psi): N/A	Discharge Timer:
Weather Conditions: Fine	Cycle: N/A
Pump on time:	Pump off time:

WATER QUALITY PARAMETERS

Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
8:21	0.5	4.10	19.84	1075	184.9	2.01	4.09	slight turb.; slight orang, NOC
8:23			19.83	1108	170.4	1.54	4.10	
8:25			19.82	1222	160.8	1.63	4.13	
8:27			19.85	1230	158.9	0.74	4.17	
8:29			19.81	1229	160.6	0.73	4.20	
8:31		4.10	19.81	1221	161.9	0.71	4.18	
						> sample		
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

Silt at base

flow rate = 0.2 L/min

SIGNATURE:

EI Australia
Suite 6.01, 55 Miller Street
PYRMONT, NSW, 2009

ABN 33 102 449 507
E service@eiaustralia.com.au
W www.eiaustralia.com.au
T 02 9516 0722

CALIBRATION CERTIFICATE
FOR PHOTO IONISATION DETECTOR

Instrument: Mini RAE 3000

Serial Number: 592-906667 - EI **PID02** ☒ **OR** 592-901345 - EI **PID03** ☐

Instrument Conditions: GOOD

Calibration gas species: Isobutylene.

Calibration gas concentration: 100 ppm

Gas bottle number: 676450

This PID has been calibrated to Isobutylene gas with the span concentration displayed as

103 ppm at 100 ppm span setting (allowable range +/-10ppm from span setting).

The PID is initially zero calibrated in fresh air.

Remaining gas in bottle: >250 psi (if reading is <250 psi, notify Equipment Manager to arrange new gas bottle order)

The above detector was calibrated in accordance with manufacturer's specifications.

Signed: [signature]

Date: 20/05/2022

Time: 5:40 pm

EI Australia
Suite 6.01, 55 Miller Street
PYRMONT, NSW, 2009

ABN 33 102 449 507
E service@eiaustralia.com.au
W www.eiaustralia.com.au
T 02 9516 0722

CALIBRATION CERTIFICATE
FOR PHOTO IONISATION DETECTOR

Instrument: Mini RAE 3000

Serial Number: 592-906667 - EI **PID02** ☒ **OR** 592-901345 - EI **PID03** ☐

Instrument Conditions: Good

Calibration gas species: Isobutylene.

Calibration gas concentration: 100 ppm

Gas bottle number: 67 6450

This PID has been calibrated to Isobutylene gas with the span concentration displayed as

101 ppm at 100 ppm span setting (allowable range +/-10ppm from span setting).

The PID is initially zero calibrated in fresh air.

Remaining gas in bottle: >250 psi (if reading is <250 psi, notify Equipment Manager to arrange new gas bottle order)

NOTE: FILTER (MOISTURE) CHANGED

The above detector was calibrated in accordance with manufacturer's specifications.

Signed: [signature]

Date: 28/5/2022

Time: 6:30 am

EI Australia
Suite 6.01, 55 Miller Street
PYRMONT, NSW, 2009

ABN 33 102 449 507
E service@eiaustralia.com.au
W www.eiaustralia.com.au
T 02 9516 0722

CALIBRATION CERTIFICATE
FOR PHOTO IONISATION DETECTOR

Instrument: Mini RAE 3000

Serial Number: 592-906667 - EI **PID02** ☒ **OR** 592-901345 - EI **PID03** ☐

Instrument Conditions: Good

Calibration gas species: Isobutylene.

Calibration gas concentration: 100 ppm

Gas bottle number: 676450

This PID has been calibrated to Isobutylene gas with the span concentration displayed as 102 ppm at 100 ppm span setting (allowable range +/-10ppm from span setting).

The PID is initially zero calibrated in fresh air.

Remaining gas in bottle: 470 psi (if reading is <250 psi, notify Equipment Manager to arrange new gas bottle order)

The above detector was calibrated in accordance with manufacturer's specifications.

Signed: _____

Date: 4/6/22

Time: 7:08 am

Appendix G – Chain of Custody and Sample Receipt Documentation

Sheet 1 of 3

Site: Brookvale

Project No: E25568

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	SOIL	WATER	0.45 µm field filtered	OTHER	HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	Excavated Natural Material (ENM) Suite	ENM Suite - Stockpile discrete (TRH/BTEX/PAHs)	ENM Suite - Stockpile composite (HM [A] /pH / EC / Foreign Materials)	Dewatering Suite PHENOLS	~~pH / pH peroxide~~ TIN	~~sPOCAS~~ TOC	Chromium Reducible Sulfur (CrS)	PFAS	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Sulphate / Chloride	Lead	TCLP HM [B] / PAH
BH1_0.3-0.4	1	J; ZLB	21/5/22	AM	X				X				X						X	X	X		X					
BH1_1.0-1.1	2	↓	↓	AM	↓					X			X															
BH1_2.5-2.6				AM																								
BH2_0.1-0.2				PM																								
BH2_0.5-0.6				↓																								
BH2_1.0-1.1																												
BH2_1.5-1.6	3								X				X						X	X	X		X					
BH2_2.5-2.6																												
BH2_3.5-3.6	4	↓	↓	↓						X			X															
TB1	5	VIAL		PM								X																
TS1	6	VIAL		PM	↓							X																
QR1	7	J; V; M	↓			X					X																	

Container Type:
J = solvent washed, acid rinsed, Tefton sealed glass jar
S = solvent washed, acid rinsed glass botlle
P = natural HDPE plastic bottle
VC = glass vial, Tefton Septum
ZLB = Zip-Lock Bag BB = Bulk Bag

Comments

HM [A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND
- [X] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other____

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table

Sampler's Name (EI):	Received by (SGS):
Print: Sergio Raposeiro	Print: M Bassoun
Signature:	Signature:
Date: 27/5/22	Date: 31-5-22 1.50

Sampler's Comments:

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

SGS EHS Sydney COC
SE232596

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

source:SE_Addroom.pdf page: 1 SGS Ref: SE232596_COC

Sheet 2 of 3

Site: Brookvale

Project No: E25588

Laboratory:
SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	SOIL	WATER	0.45 µm field filtered	OTHER	HM A /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM A /TRH/BTEX/PAHs	HM A /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	Excavated Natural Material (ENM) Suite	ENM Suite - Stockpile discrete (TRH/BTEX/PAHs)	ENM Suite - Stockpile composite (HM A /pH / EC / Foreign Materials)	~~Dewatering Suite~~ PHENOLS	~~pH / pH peroxide~~ TiN	~~SPOCAS~~ TOC	Chromium Reducible Sulfur (CrS)	PFAS	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Sulphate / Chloride	Lead	TCLP HM B / PAH
BH3_0.2-0.3	8		28/5/22						X				X						X	X	X		X					
BH3_1.0-1.1																												
BH3_2.0-2.1																												
BH3_3.0-3.1	9									X			X															
BH3_4.0-4.1																												
BH4_0.4-0.5	10								X				X						X	X	X		X					
BH4_0.6-0.7																												
BH4_1.2-1.3	11									X			X															
BH5_0.2-0.3	12								X				X						X	X	X		X					
BH5_1.0-1.1																												
BH5_2.0-2.1																												
BH5_2.3-2.4	13									X			X															

Container Type:
J = solvent washed, acid rinsed, Tefton sealed glass jar
S = solvent washed, acid rinsed glass bottle
P = natural HDPE plastic bottle
VC = glass vial, Tefton Septum
ZLB = Zip-Lock Bag BB = Bulk Bag

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Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

COC June 2021 FORM v.5 - SGS

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Name (EI):	Received by (SGS):
Print: Sergio Raposine	Print: M. Bassetti
Signature:	Signature:
Date: 28/5/22	Date: 31.5.22 1:50

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

Report with EI Waste Classification Table ☐

Sampler's Comments:

Comments

HM A
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM B
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND
☒ Standard
☐ 24 Hours
☐ 48 Hours
☐ 72 Hours
☐ Other_____

Sheet 3 of 3

Site:

Project No: E25568

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	SOIL	WATER	0.45 µm field filtered	OTHER	HM A /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM A /TRH/BTEX/PAHs	HM A /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	Excavated Natural Material (ENM) Suite	ENM Suite - Stockpile discrete (TRH/BTEX/PAHs)	ENM Suite - Stockpile composite (HM A /pH / EC / Foreign Materials)	~~Dewatering Suite~~ Phenols	~~pH / pH peroxide~~ TIN	~~sPOCAS~~ TOC	Chromium Reducible Sulfur (CrS)	PFAS	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Sulphate / Chloride	Lead	TCLP HM B / PAH
BH6_0.2-0.3	14		28/5/22						X				X						X	X	X		X					
BH7_0.1-0.2	15		28/5/22						X				X						X	X	X		X					
QD1	16		28/5/22							X																		
QT1 (*)			28/5/22							X																		
~~TB1~~																												
~~TS1~~																												
QR2			28/5/22																									

Container Type:
J = solvent washed, acid rinsed, Teflon sealed glass jar
S = solvent washed, acid rinsed glass bottle
P = natural HDPE plastic bottle
VC = glass vial, Tefton Septum
ZLB = Zip-Lock Bag BB = Bulk Bag

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

COC June 2021 FORM v.5 - SGS

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Name (EI):	Received by (SGS):
Print: Sergio Raposeira	Print: M. Elsasser
Signature:	Signature:
Date: 28/5/22	Date: 31-5-22 1:50

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

Report with EI Waste Classification Table ☐

Sampler's Comments:

(*) QT1 - Please forward to Envirolab

Comments

HM A
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM B
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND
☒ Standard
☐ 24 Hours
☐ 48 Hours
☐ 72 Hours
☐ Other____

SAMPLE RECEIPT ADVICE

SE232596

CLIENT DETAILS

Contact	Sergio Raposeira
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	sergio.raposeira@eiaustralia.com.au
Project	**E25568 Brookvale**
Order Number	**E25568**
Samples	16

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Tue 31/5/2022
Report Due	Tue 7/6/2022
SGS Reference	**SE232596**

SUBMISSION DETAILS

This is to confirm that 16 samples were received on Tuesday 31/5/2022. Results are expected to be ready by COB Tuesday 7/6/2022. Please quote SGS reference SE232596 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	15 Soil, 1 Water
Date documentation received	31/5/2022	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	8.8C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

11 Soil and 1 Water have been placed on hold as no tests have been assigned for them by the client . These samples will not be processed.
2 Extra Trip Spikes received.
PFAS subcontracted to SGS Melbourne, 10/585 Blackburn Road, Notting Hill, VIC, NATA Accreditation Numbe. 2562/14420.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

SAMPLE RECEIPT ADVICE

SE232596

CLIENT DETAILS

Client EI AUSTRALIA

Project E25568 Brookvale

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Phenolics in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH1_0.3-0.4	30	14	26	11	1	10	81	7
002	BH1_1.0-1.1	-	-	26	-	-	10	81	7
003	BH2_1.5-1.6	30	14	26	11	1	10	81	7
004	BH2_3.5-3.6	-	-	26	-	-	10	81	7
005	TB1	-	-	-	-	-	-	11	-
006	TS1	-	-	-	-	-	-	11	-
008	BH3_0.2-0.3	30	14	26	11	1	10	81	7
009	BH3_3.0-3.1	-	-	26	-	-	10	81	7
010	BH4_0.4-0.5	30	14	26	11	1	10	81	7
011	BH4_1.2-1.3	-	-	26	-	-	10	81	7
012	BH5_0.2-0.3	30	14	26	11	1	10	81	7
013	BH5_2.3-2.4	-	-	26	-	-	10	81	7
014	BH6_0.2-0.3	30	14	26	11	1	10	81	7
015	BH7_0.1-0.2	30	14	26	11	1	10	81	7
016	QD1	-	-	26	-	-	10	11	7

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE232596

CLIENT DETAILS

Client EI AUSTRALIA

Project E25568 Brookvale

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	Per- and Polyfluoroalkyl Substances (PFAS) in	TOC in Soil	Total Recoverable Elements in Soil/Waste
001	BH1_0.3-0.4	2	1	1	56	2	8
002	BH1_1.0-1.1	-	1	1	-	-	7
003	BH2_1.5-1.6	2	1	1	56	2	8
004	BH2_3.5-3.6	-	1	1	-	-	7
005	TB1	-	-	1	-	-	-
008	BH3_0.2-0.3	2	1	1	56	2	8
009	BH3_3.0-3.1	-	1	1	-	-	7
010	BH4_0.4-0.5	2	1	1	56	2	8
011	BH4_1.2-1.3	-	1	1	-	-	7
012	BH5_0.2-0.3	2	1	1	56	2	8
013	BH5_2.3-2.4	-	1	1	-	-	7
014	BH6_0.2-0.3	2	1	1	56	2	8
015	BH7_0.1-0.2	2	1	1	56	2	8
016	QD1	-	1	1	-	-	7

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE232596

CLIENT DETAILS

Client EI AUSTRALIA

Project E25568 Brookvale

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
007	QR1	1	7	9	11	7

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

Sheet 1 of 1

Site: Brookvale

Project No: E25568

Laboratory: Eurofins Environment Testing Aust. P/L
6 / 16 Mars Road,
Lane Cove NSW 2066
P: 02 9900 8400

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX OCP and OPP	VOCs	Asbestos BTEX	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	Major ions	Phenols		TCLP HM [B] / PAH
GW_BH1	1	J; S; P	4/6/22	AM	X				X	X	X	X							X	X	X		
GW_BH2	2	↓	4/6/22	AM	X				X		X	X							X	X	X		
GW_BH3	3	↓	4/6/22	AM	X				X		X	X							X	X	X		
GWQD1	4	↓	4/6/22	AM	X					X													
GWTB1	5	J	4/6/22	AM	X								X										
GWTS1	6	J	4/6/22	AM	X								X										
GWQT1 (7)		J; S; P	4/6/22	AM	X					X	X												
QR1	7	J; S	4/6/22	AM	X					X													

SGS EHS Sydney COC
SE232924

Comments

HM [A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / Turbidity NTU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND
- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Container Type:
J= solvent washed, acid rinsed,Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (Eurofins):
Print: SERGIO R.	Print:
Signature:	Signature:
Date: 4/6/22	Date: 4/6 @ 1.35

Sampler's Comments: @Please foward GWQT1 to ENVIROLAB

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

source:SE_Addressee.pdf page 1 SGS Ref: SE232924_COC

SAMPLE RECEIPT ADVICE

SE232924

CLIENT DETAILS

Contact	Sergio Raposeira
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	sergio.raposeira@eiaustralia.com.au
Project	**E25568 Brookvale**
Order Number	**E25568**
Samples	7

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Wed 8/6/2022
Report Due	Thu 16/6/2022
SGS Reference	**SE232924**

SUBMISSION DETAILS

This is to confirm that 7 samples were received on Wednesday 8/6/2022. Results are expected to be ready by COB Thursday 16/6/2022.
Please quote SGS reference SE232924 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	7 Water
Date documentation received	8/6/2022	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	6°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

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

COMMENTS

PFAS subcontracted to SGS Melbourne, 10/585 Blackburn Road, Notting Hill, VIC, NATA Accreditation Numbe. 2562/14420.

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SAMPLE RECEIPT ADVICE

SE232924

CLIENT DETAILS

Client EI AUSTRALIA

Project E25568 Brookvale

SUMMARY OF ANALYSIS

No.	Sample ID	Anions by Ion Chromatography in Water	OC Pesticides in Water	OP Pesticides in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Total Phenolics in Water	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	GW_BH1	2	30	13	22	1	9	78	7
002	GW_BH2	2	30	13	22	1	9	78	7
003	GW_BH3	2	30	13	22	1	9	78	7
004	GWQD1	-	-	-	-	-	9	11	7
005	GWTB1	-	-	-	-	-	-	11	-
006	GWTS1	-	-	-	-	-	-	11	-
007	QR1	-	-	-	-	-	9	11	7

CONTINUED OVERLEAF

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

SAMPLE RECEIPT ADVICE

SE232924

CLIENT DETAILS

Client EI AUSTRALIA

Project E25568 Brookvale

SUMMARY OF ANALYSIS

No.	Sample ID	Alkalinity	Mercury (dissolved) in Water	Metals in Water (Dissolved) by ICPOES	Per- and Polyfluoroalkyl Substances (PFAS) in	Trace Metals (Dissolved) in Water by ICPMS
001	GW_BH1	1	1	4	56	7
002	GW_BH2	1	1	4	56	7
003	GW_BH3	1	1	4	56	7
004	GWQD1	-	1	-	-	7
007	QR1	-	1	-	-	7

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

Sheet 1 of 1

Site: Brookvale

Project No: E25568

Laboratory: Eurofins Environment Testing Aust. P/L
6 / 16 Mars Road,
Lane Cove NSW 2066
P: 02 9900 8400

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM[A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM[A] /TRH/BTEX/PAHs	HM[A] /TRH/BTEX	BTEX OCP and OPP	VOCs	Asbestos BTEX	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	MAJOR IONS	Phenols		TCLP HM[B] / PAH
GW_BH1		J; S; P	4/6/22	AM	X				X	X	X	X							X	X	X		
GW_BH2		↓	4/6/22	AM	X				X		X	X							X	X	X		
GW_BH3		↓	4/6/22	AM	X				X		X	X							X	X	X		
GWQD1		↓	4/6/22	AM	X					X													
GWTB1		J	4/6/22	AM	X								X										
GWTS1		J	4/6/22	AM	X								X										
(1) GWQT1 (*)		J; S; P	4/6/22	AM	X					X	X												
QR1		J S P	4/6/22	AM	X					X													

Sample Matrix

Analysis

Comments

HM[A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / Turbidity NTU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

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

Job No: 297658
Date Received: 9/6/22
Time Received: 1715
Received by: KW
Temp: Cool/Ambient
Cooling: Ice/icepack 6°C
Security: Intact/Broken/None

LABORATORY TURNAROUND

- [X] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other

Container Type:
J= solvent washed, acid rinsed,Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (Eurofins):
Print: SERGIO R.	Print: Katy Wayne
Signature:	Signature:
Date: 4/6/22	Date: 9/6/22 1715

Sampler's Comments:
(*) Please forward GWQT1 to ENVIROLAB

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

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

SAMPLE RECEIPT ADVICE

Client Details

Client	EI Australia
Attention	Lab Email

Sample Login Details

Your reference	E25568, Brookvale
Envirolab Reference	297658
Date Sample Received	09/06/2022
Date Instructions Received	09/06/2022
Date Results Expected to be Reported	17/06/2022

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	6
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

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

Analysis Underway, details on the following page:

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

Sample ID	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	HM in water - dissolved
GWQT1	✓	✓	✓

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

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Appendix H – Laboratory Analytical Reports

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Sergio Raposeira
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	sergio.raposeira@eiaustralia.com.au
Project	**E25568 Brookvale**
Order Number	**E25568**
Samples	16

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE232596 R0**
Date Received	31/5/2022
Date Reported	7/6/2022

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.
Sample # 8 : A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.
Sample # 15 : Chrysotile, Amosite asbestos found as approx 7-8 x 2mm loose fibre bundles x>10 and found in approx 50x20x4mm cement sheet fragments x2.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

Akheeqar BENIAMEEN
Chemist

Bennet LO
Senior Chemist

Dong LIANG
Metals/Inorganics Team Leader

Kamrul AHSAN
Senior Chemist

Ly Kim HA
Organic Section Head

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

VOC's in Soil [AN433] Tested: 3/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH1_1.0-1.1 SOIL - 21/5/2022 SE232596.002	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH2_3.5-3.6 SOIL - 21/5/2022 SE232596.004	TB1 SOIL - 21/5/2022 SE232596.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene (VOC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	<1	-
Chloromethane	mg/kg	1	<1	<1	<1	<1	-
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Bromomethane	mg/kg	1	<1	<1	<1	<1	-
Chloroethane	mg/kg	1	<1	<1	<1	<1	-
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	<1	-
Acetone (2-propanone)	mg/kg	10	<10	<10	<10	<10	-
Iodomethane	mg/kg	5	<5	<5	<5	<5	-
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Acrylonitrile	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	-
Allyl chloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Carbon disulfide	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	-
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Vinyl acetate	mg/kg	10	<10	<10	<10	<10	-
MEK (2-butanone)	mg/kg	10	<10	<10	<10	<10	-
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Bromochloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Chloroform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
2-nitropropane	mg/kg	10	<10	<10	<10	<10	-
Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	<1	<1	-
cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
2-hexanone (MBK)	mg/kg	5	<5	<5	<5	<5	-
1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Chlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Bromoform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1	-
Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1	-

VOC's in Soil [AN433] Tested: 3/6/2022 (continued)

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH1_1.0-1.1 SOIL - 21/5/2022 SE232596.002	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH2_3.5-3.6 SOIL - 21/5/2022 SE232596.004	TB1 SOIL - 21/5/2022 SE232596.005
Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Bromobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
n-propylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
n-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Total VOC*	mg/kg	24	<24	<24	<24	<24	-
Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	<3.0	<3.0	<3.0	<3.0	-
Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8	<1.8	<1.8	<1.8	-
Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8	<1.8	<1.8	<1.8	-

VOC's in Soil [AN433] Tested: 3/6/2022 (continued)

PARAMETER	UOM	LOR	TS1 SOIL - 21/5/2022 SE232596.006	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH3_3.0-3.1 SOIL - 28/5/2022 SE232596.009	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH4_1.2-1.3 SOIL - 28/5/2022 SE232596.011
Benzene	mg/kg	0.1	[88%]	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	[91%]	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	[92%]	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	[92%]	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	[93%]	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	-	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	-	<0.6	<0.6	<0.6	<0.6
Naphthalene (VOC)	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Dichlorodifluoromethane (CFC-12)	mg/kg	1	-	<1	<1	<1	<1
Chloromethane	mg/kg	1	-	<1	<1	<1	<1
Vinyl chloride (Chloroethene)	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Bromomethane	mg/kg	1	-	<1	<1	<1	<1
Chloroethane	mg/kg	1	-	<1	<1	<1	<1
Trichlorofluoromethane	mg/kg	1	-	<1	<1	<1	<1
Acetone (2-propanone)	mg/kg	10	-	<10	<10	<10	<10
Iodomethane	mg/kg	5	-	<5	<5	<5	<5
1,1-dichloroethene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Acrylonitrile	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Dichloromethane (Methylene chloride)	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5
Allyl chloride	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Carbon disulfide	mg/kg	0.5	-	<0.5	<0.5	<0.5	<0.5
trans-1,2-dichloroethene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,1-dichloroethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Vinyl acetate	mg/kg	10	-	<10	<10	<10	<10
MEK (2-butanone)	mg/kg	10	-	<10	<10	<10	<10
cis-1,2-dichloroethene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Bromochloromethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Chloroform	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
2,2-dichloropropane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,2-dichloroethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,1,1-trichloroethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,1-dichloropropene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Carbon tetrachloride	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Dibromomethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,2-dichloropropane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
2-nitropropane	mg/kg	10	-	<10	<10	<10	<10
Bromodichloromethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
MIBK (4-methyl-2-pentanone)	mg/kg	1	-	<1	<1	<1	<1
cis-1,3-dichloropropene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
trans-1,3-dichloropropene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,1,2-trichloroethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,3-dichloropropane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Chlorodibromomethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
2-hexanone (MBK)	mg/kg	5	-	<5	<5	<5	<5
1,2-dibromoethane (EDB)	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,1,1,2-tetrachloroethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Chlorobenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Bromoform	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
cis-1,4-dichloro-2-butene	mg/kg	1	-	<1	<1	<1	<1
Styrene (Vinyl benzene)	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,1,2,2-tetrachloroethane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,2,3-trichloropropane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
trans-1,4-dichloro-2-butene	mg/kg	1	-	<1	<1	<1	<1

VOC's in Soil [AN433] Tested: 3/6/2022 (continued)

PARAMETER	UOM	LOR	TS1 SOIL - 21/5/2022 SE232596.006	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH3_3.0-3.1 SOIL - 28/5/2022 SE232596.009	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH4_1.2-1.3 SOIL - 28/5/2022 SE232596.011
Isopropylbenzene (Cumene)	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Bromobenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
n-propylbenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
2-chlorotoluene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
4-chlorotoluene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,3,5-trimethylbenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
tert-butylbenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,2,4-trimethylbenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
sec-butylbenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,3-dichlorobenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,4-dichlorobenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
p-isopropyltoluene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,2-dichlorobenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
n-butylbenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,2-dibromo-3-chloropropane	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,2,4-trichlorobenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Hexachlorobutadiene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
1,2,3-trichlorobenzene	mg/kg	0.1	-	<0.1	<0.1	<0.1	<0.1
Total VOC*	mg/kg	24	-	<24	<24	<24	<24
Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	-	<3.0	<3.0	<3.0	<3.0
Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	<1.8	<1.8	<1.8	<1.8
Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	<1.8	<1.8	<1.8	<1.8

VOC's in Soil [AN433] Tested: 3/6/2022 (continued)

PARAMETER	UOM	LOR	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012	BH5_2.3-2.4 SOIL - 28/5/2022 SE232596.013	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015	QD1 SOIL - 28/5/2022 SE232596.016
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene (VOC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	<1	<1	-
Chloromethane	mg/kg	1	<1	<1	<1	<1	-
Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Bromomethane	mg/kg	1	<1	<1	<1	<1	-
Chloroethane	mg/kg	1	<1	<1	<1	<1	-
Trichlorofluoromethane	mg/kg	1	<1	<1	<1	<1	-
Acetone (2-propanone)	mg/kg	10	<10	<10	<10	<10	-
Iodomethane	mg/kg	5	<5	<5	<5	<5	-
1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Acrylonitrile	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	-
Allyl chloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Carbon disulfide	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	-
trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Vinyl acetate	mg/kg	10	<10	<10	<10	<10	-
MEK (2-butanone)	mg/kg	10	<10	<10	<10	<10	-
cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Bromochloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Chloroform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Dibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	**0.6**	<0.1	**0.2**	<0.1	-
2-nitropropane	mg/kg	10	<10	<10	<10	<10	-
Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	<1	<1	-
cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
2-hexanone (MBK)	mg/kg	5	<5	<5	<5	<5	-
1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Chlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Bromoform	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1	-
Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	<1	<1	-

VOC's in Soil [AN433] Tested: 3/6/2022 (continued)

PARAMETER	UOM	LOR	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012	BH5_2.3-2.4 SOIL - 28/5/2022 SE232596.013	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015	QD1 SOIL - 28/5/2022 SE232596.016
Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Bromobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
n-propylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
n-butylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	-
Total VOC*	mg/kg	24	<24	<24	<24	<24	-
Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	<3.0	<3.0	<3.0	<3.0	-
Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8	<1.8	<1.8	<1.8	-
Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8	<1.8	<1.8	<1.8	-

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 3/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH1_1.0-1.1 SOIL - 21/5/2022 SE232596.002	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH2_3.5-3.6 SOIL - 21/5/2022 SE232596.004	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH3_3.0-3.1 SOIL - 28/5/2022 SE232596.009	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH4_1.2-1.3 SOIL - 28/5/2022 SE232596.011	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012	BH5_2.3-2.4 SOIL - 28/5/2022 SE232596.013
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015	QD1 SOIL - 28/5/2022 SE232596.016
TRH C6-C9	mg/kg	20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 3/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH1_1.0-1.1 SOIL - 21/5/2022 SE232596.002	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH2_3.5-3.6 SOIL - 21/5/2022 SE232596.004	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH3_3.0-3.1 SOIL - 28/5/2022 SE232596.009	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH4_1.2-1.3 SOIL - 28/5/2022 SE232596.011	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012	BH5_2.3-2.4 SOIL - 28/5/2022 SE232596.013
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015	QD1 SOIL - 28/5/2022 SE232596.016
TRH C10-C14	mg/kg	20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 3/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH1_1.0-1.1 SOIL - 21/5/2022 SE232596.002	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH2_3.5-3.6 SOIL - 21/5/2022 SE232596.004	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH3_3.0-3.1 SOIL - 28/5/2022 SE232596.009	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH4_1.2-1.3 SOIL - 28/5/2022 SE232596.011	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012	BH5_2.3-2.4 SOIL - 28/5/2022 SE232596.013
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	**0.1**	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 3/6/2022 (continued)

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015	QD1 SOIL - 28/5/2022 SE232596.016
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	**0.2**	<0.1	<0.1
Pyrene	mg/kg	0.1	**0.2**	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	**0.1**	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	**0.1**	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8

OC Pesticides in Soil [AN420] Tested: 3/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 3/6/2022 (continued)

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1

OP Pesticides in Soil [AN420] Tested: 3/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015
Dichlorvos	mg/kg	0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 3/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015
Arochlor 1016	mg/kg	0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1

Total Phenolics in Soil [AN295] Tested: 7/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012
Total Phenols	mg/kg	0.5	<0.5	<0.5	<0.5	**0.8**	<0.5

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015
Total Phenols	mg/kg	0.5	<0.5	<0.5

TOC in Soil [AN188] Tested: 6/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012
Total Organic Carbon	%w/w	0.05	**0.17**	**0.18**	**0.15**	**0.27**	**0.93**
Organic Matter (calc)*	%w/w	0.1	**0.3**	**0.3**	**0.3**	**0.5**	**1.6**

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015
Total Organic Carbon	%w/w	0.05	**0.49**	**2.6**
Organic Matter (calc)*	%w/w	0.1	**0.8**	**4.5**

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 6/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH1_1.0-1.1 SOIL - 21/5/2022 SE232596.002	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH2_3.5-3.6 SOIL - 21/5/2022 SE232596.004	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008
Arsenic, As	mg/kg	1	1	<1	<1	1	1
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	1.7	5.3	5.5	10	18
Copper, Cu	mg/kg	0.5	<0.5	<0.5	1.1	<0.5	<0.5
Lead, Pb	mg/kg	1	5	7	6	7	6
Nickel, Ni	mg/kg	0.5	<0.5	0.6	1.5	0.9	0.7
Zinc, Zn	mg/kg	2	<2.0	5.1	3.8	2.7	3.7
Tin, Sn	mg/kg	3	<3	-	<3	-	<3

PARAMETER	UOM	LOR	BH3_3.0-3.1 SOIL - 28/5/2022 SE232596.009	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH4_1.2-1.3 SOIL - 28/5/2022 SE232596.011	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012	BH5_2.3-2.4 SOIL - 28/5/2022 SE232596.013
Arsenic, As	mg/kg	1	1	<1	<1	<1	<1
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	14	<0.5	1.7	2.9	3.4
Copper, Cu	mg/kg	0.5	<0.5	<0.5	<0.5	14	<0.5
Lead, Pb	mg/kg	1	7	<1	3	160	4
Nickel, Ni	mg/kg	0.5	1.5	<0.5	<0.5	0.7	0.5
Zinc, Zn	mg/kg	2	4.2	<2.0	<2.0	63	<2.0
Tin, Sn	mg/kg	3	-	<3	-	<3	-

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015	QD1 SOIL - 28/5/2022 SE232596.016
Arsenic, As	mg/kg	1	<1	5	<1
Cadmium, Cd	mg/kg	0.3	<0.3	4.8	<0.3
Chromium, Cr	mg/kg	0.5	4.0	29	16
Copper, Cu	mg/kg	0.5	9.5	320	1.2
Lead, Pb	mg/kg	1	13	310	10
Nickel, Ni	mg/kg	0.5	1.9	88	1.3
Zinc, Zn	mg/kg	2	23	560	5.7
Tin, Sn	mg/kg	3	<3	74	-

Mercury in Soil [AN312] Tested: 6/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH1_1.0-1.1 SOIL - 21/5/2022 SE232596.002	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH2_3.5-3.6 SOIL - 21/5/2022 SE232596.004	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008
Mercury	mg/kg	0.05	<0.05	<0.05	**0.05**	<0.05	<0.05

PARAMETER	UOM	LOR	BH3_3.0-3.1 SOIL - 28/5/2022 SE232596.009	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH4_1.2-1.3 SOIL - 28/5/2022 SE232596.011	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012	BH5_2.3-2.4 SOIL - 28/5/2022 SE232596.013
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	**0.08**	<0.05

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015	QD1 SOIL - 28/5/2022 SE232596.016
Mercury	mg/kg	0.05	<0.05	**0.08**	<0.05

Moisture Content [AN002] Tested: 3/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH1_1.0-1.1 SOIL - 21/5/2022 SE232596.002	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH2_3.5-3.6 SOIL - 21/5/2022 SE232596.004	TB1 SOIL - 21/5/2022 SE232596.005
% Moisture	%w/w	1	7.9	13.9	10.3	13.8	<1.0

PARAMETER	UOM	LOR	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH3_3.0-3.1 SOIL - 28/5/2022 SE232596.009	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH4_1.2-1.3 SOIL - 28/5/2022 SE232596.011	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012
% Moisture	%w/w	1	11.4	12.7	14.1	4.9	8.7

PARAMETER	UOM	LOR	BH5_2.3-2.4 SOIL - 28/5/2022 SE232596.013	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015	QD1 SOIL - 28/5/2022 SE232596.016
% Moisture	%w/w	1	7.5	9.4	12.7	10.5

Fibre Identification in soil [AN602] Tested: 7/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015
Asbestos Detected	No unit	-	No	Yes
Estimated Fibres*	%w/w	0.01	<0.01	**>0.01**

Per- and Polyfluoroalkyl Substances (PFAS) in Solid Samples [MA-1523] Tested: 6/6/2022

PARAMETER	UOM	LOR	BH1_0.3-0.4 SOIL - 21/5/2022 SE232596.001	BH2_1.5-1.6 SOIL - 21/5/2022 SE232596.003	BH3_0.2-0.3 SOIL - 28/5/2022 SE232596.008	BH4_0.4-0.5 SOIL - 28/5/2022 SE232596.010	BH5_0.2-0.3 SOIL - 28/5/2022 SE232596.012
Perfluorobutanoic acid (PFBA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorooctanoic Acid (PFOA)	mg/kg	0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008
Perfluorononanoic acid (PFNA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorodecanoic acid (PFDA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoroundecanoic acid (PFUnA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorododecanoic acid (PFDoA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorohexadecanoic acid (PFHxDA)	mg/kg	0.0032	<0.0032	<0.0032	<0.0032	<0.0032	<0.0032
Perfluorobutane sulfonate (PFBS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoropentane sulfonate (PFPeS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorohexane sulfonate (PFHxS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluoroheptane sulfonate (PFHpS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorooctane sulfonate (PFOS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Sum PFOS and PFHXS	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorononane sulfonate (PFNS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorodecane sulfonate (PFDS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorododecane sulfonate (PFDoS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
1H,1H,2H,2H-Perfluorohexane sulfonate (4:2) (4:2 FTS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
1H,1H,2H,2H-Perfluorooctane sulfonate (6:2) (6:2 FTS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
1H,1H,2H,2H-Perfluorodecane sulfonate (8:2) (8:2 FTS)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
Perfluorooctane sulfonamide (PFOSA)	mg/kg	0.0016	<0.0016	<0.0016	<0.0016	<0.0016	<0.0016
N-Methylperfluorooctane sulfonamide (N-MeFOSA)	mg/kg	0.008	<0.008	<0.008	<0.008	<0.008	<0.008
N-Ethylperfluorooctane sulfonamide (N-EtFOSA)	mg/kg	0.008	<0.008	<0.008	<0.008	<0.008	<0.008
2-(N-Methylperfluorooctane sulfonamido)-ethanol	mg/kg	0.016	<0.016	<0.016	<0.016	<0.016	<0.016
2-(N-Ethylperfluorooctane sulfonamido)-ethanol	mg/kg	0.016	<0.016	<0.016	<0.016	<0.016	<0.016
N-Methylperfluorooctanesulfonamidoacetic acid	mg/kg	0.008	<0.008	<0.008	<0.008	<0.008	<0.008
N-Ethylperfluorooctanesulfonamidoacetic Acid	mg/kg	0.008	<0.008	<0.008	<0.008	<0.008	<0.008
Total of PFAS (n=30)	mg/kg	0.08	<0.08	<0.08	<0.08	<0.08	<0.08

Per- and Polyfluoroalkyl Substances (PFAS) in Solid Samples [MA-1523] Tested: 6/6/2022 (continued)

PARAMETER	UOM	LOR	BH6_0.2-0.3 SOIL - 28/5/2022 SE232596.014	BH7_0.1-0.2 SOIL - 28/5/2022 SE232596.015
Perfluorobutanoic acid (PFBA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluoropentanoic acid (PFPeA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorohexanoic acid (PFHxA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluoroheptanoic acid (PFHpA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorooctanoic Acid (PFOA)	mg/kg	0.0008	<0.0008	<0.0008
Perfluorononanoic acid (PFNA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorodecanoic acid (PFDA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluoroundecanoic acid (PFUnA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorododecanoic acid (PFDoA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorotridecanoic acid (PFTrDA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorotetradecanoic acid (PFTeDA)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorohexadecanoic acid (PFHxDA)	mg/kg	0.0032	<0.0032	<0.0032
Perfluorobutane sulfonate (PFBS)	mg/kg	0.0016	<0.0016	<0.0016
Perfluoropentane sulfonate (PFPeS)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorohexane sulfonate (PFHxS)	mg/kg	0.0016	<0.0016	<0.0016
Perfluoroheptane sulfonate (PFHpS)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorooctane sulfonate (PFOS)	mg/kg	0.0016	<0.0016	<0.0016
Sum PFOS and PFHXS	mg/kg	0.0016	<0.0016	<0.0016
Perfluorononane sulfonate (PFNS)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorodecane sulfonate (PFDS)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorododecane sulfonate (PFDoS)	mg/kg	0.0016	<0.0016	<0.0016
1H,1H,2H,2H-Perfluorohexane sulfonate (4:2) (4:2 FTS)	mg/kg	0.0016	<0.0016	<0.0016
1H,1H,2H,2H-Perfluorooctane sulfonate (6:2) (6:2 FTS)	mg/kg	0.0016	<0.0016	<0.0016
1H,1H,2H,2H-Perfluorodecane sulfonate (8:2) (8:2 FTS)	mg/kg	0.0016	<0.0016	<0.0016
Perfluorooctane sulfonamide (PFOSA)	mg/kg	0.0016	<0.0016	<0.0016
N-Methylperfluorooctane sulfonamide (N-MeFOSA)	mg/kg	0.008	<0.008	<0.008
N-Ethylperfluorooctane sulfonamide (N-EtFOSA)	mg/kg	0.008	<0.008	<0.008
2-(N-Methylperfluorooctane sulfonamido)-ethanol	mg/kg	0.016	<0.016	<0.016
2-(N-Ethylperfluorooctane sulfonamido)-ethanol	mg/kg	0.016	<0.016	<0.016
N-Methylperfluorooctanesulfonamidoacetic acid	mg/kg	0.008	<0.008	<0.008
N-Ethylperfluorooctanesulfonamidoacetic Acid	mg/kg	0.008	<0.008	<0.008
Total of PFAS (n=30)	mg/kg	0.08	<0.08	<0.08

VOCs in Water [AN433] Tested: 1/6/2022

PARAMETER	UOM	LOR	QR1 WATER - 21/5/2022 SE232596.007
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene (VOC)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 1/6/2022

PARAMETER	UOM	LOR	QR1 WATER - 21/5/2022 SE232596.007
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.5	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 2/6/2022

PARAMETER	UOM	LOR	QR1 WATER - 21/5/2022 SE232596.007
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
TRH C37-C40	µg/L	200	<200
TRH >C10-C16	µg/L	60	<60
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C40	µg/L	320	<320

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 31/5/2022

PARAMETER	UOM	LOR	QR1 WATER - 21/5/2022 SE232596.007
Arsenic, As	µg/L	1	<1
Cadmium, Cd	µg/L	0.1	<0.1
Chromium, Cr	µg/L	1	<1
Copper, Cu	µg/L	1	<1
Lead, Pb	µg/L	1	<1
Nickel, Ni	µg/L	1	<1
Zinc, Zn	µg/L	5	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 1/6/2022

PARAMETER	UOM	LOR	QR1 WATER - 21/5/2022 SE232596.007
Mercury	mg/L	0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN188	The organic material in the soil sample is oxidised with chromic acid in the presence of excess sulfuric acid , without external heat being applied. The excess dichromate ion is determined by titration with standard ammonium iron (II) sulfate solution and the amount of oxidised material is calculated from the quantity of dichromate reduced . Referenced to NEPM 105 and AS1289.1.1.1.
AN295	For Soil, a 1:10 NaOH extraction is made and analysed after 16 hours. The soil extract or water sample is distilled in a phosphoric acid stream. Phenolic compounds in the distillate react with a reagent stream of potassium hexacyanoferrate(III) and 4-Amino-2,3-dimethyl-3-pryazolin-5-one in an alkaline medium to form a coloured complex which is analysed spectrophotometrically onboard a continuous flow analyser.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.

AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit (RL) of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.
MA-1523	This method covers the analysis of per- and polyfluoroalkyl substances (PFAS) in aqueous, solid and biosolid samples and solvent extracts, determined as the total of linear and branched isomers. After spiking with isotopically labelled quantification surrogates and clean-up via SPE cartridges sample extracts are analysed by liquid chromatography/mass spectrometry (LC-MS/MS). PFAS concentrations are determined by isotope dilution quantification.

FOOTNOTES

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

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

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

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

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

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

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

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

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

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Email	sergio.raposeira@eiaustralia.com.au
Project	**E25568 Brookvale**
Order Number	**E25568**
Samples	7

LABORATORY DETAILS

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SGS Reference	**SE232596 R0**
Date Received	31 May 2022
Date Reported	07 Jun 2022

COMMENTS

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

No respirable fibres detected in all soil samples using trace analysis technique.
Sample # 8 : A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.
Sample # 15 : Chrysotile, Amosite asbestos found as approx 7-8 x 2mm loose fibre bundles x>10 and found in approx 50x20x4mm cement sheet fragments x2.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin.

SIGNATORIES

S. Ravendra.

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE232596.001	BH1_0.3-0.4	Soil	308g Clay,Sand,Soil	21 May 2022	No Asbestos Found at RL of 0.1g/kg	<0.01
SE232596.003	BH2_1.5-1.6	Soil	364g Clay,Sand,Soil	21 May 2022	No Asbestos Found at RL of 0.1g/kg	<0.01
SE232596.008	BH3_0.2-0.3	Soil	203g Clay,Sand,Rocks	28 May 2022	No Asbestos Found at RL of 0.1g/kg	<0.01
SE232596.010	BH4_0.4-0.5	Soil	340g Sand,Soil,Rocks	28 May 2022	No Asbestos Found at RL of 0.1g/kg	<0.01
SE232596.012	BH5_0.2-0.3	Soil	388g Sand,Soil,Rocks	28 May 2022	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE232596.014	BH6_0.2-0.3	Soil	375g Clay,Sand,Soil, Rocks	28 May 2022	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE232596.015	BH7_0.1-0.2	Soil	314g Sand,Soil,Rocks	28 May 2022	Amosite & Chrysotile Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	>0.01

METHOD SUMMARY

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

FOOTNOTES

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

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

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

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

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

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

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ANALYTICAL REPORT

Accreditation No. 2562

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Project	**E25568 Brookvale**
Order Number	**E25568**
Samples	7

LABORATORY DETAILS

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SGS Reference	**SE232924 R0**
Date Received	8/6/2022
Date Reported	16/6/2022

COMMENTS

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

PFAS subcontracted to SGS Melbourne, 10/585 Blackburn Road, Notting Hill, VIC, NATA Accreditation Number. 2562/14420.Re port Number ME327309

MA-1523: Majority of surrogate recoveries within acceptance criteria.

SIGNATORIES

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Chemist

Bennet LO
Senior Chemist

Dong LIANG
Metals/Inorganics Team Leader

Ly Kim HA
Organic Section Head

Teresa NGUYEN
Organic Chemist

VOCs in Water [AN433] Tested: 15/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003	GWQD1 WATER - 4/6/2022 SE232924.004	GWTB1 WATER - 4/6/2022 SE232924.005
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1	<1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3	<3	<3	<3
Naphthalene (VOC)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	<5	-	-
Chloromethane	µg/L	5	<5	<5	<5	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	<0.3	-	-
Bromomethane	µg/L	10	<10	<10	<10	-	-
Chloroethane	µg/L	5	<5	<5	<5	-	-
Trichlorofluoromethane	µg/L	1	<1	<1	**7**	-	-
Acetone (2-propanone)	µg/L	10	<10	<10	<10	-	-
Iodomethane	µg/L	5	<5	<5	<5	-	-
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Acrylonitrile	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	<5	-	-
Allyl chloride	µg/L	2	<2	<2	<2	-	-
Carbon disulfide	µg/L	2	<2	<2	<2	-	-
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	<2	<2	-	-
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Vinyl acetate	µg/L	10	<10	<10	<10	-	-
MEK (2-butanone)	µg/L	10	<10	<10	<10	-	-
cis-1,2-dichloroethene	µg/L	0.5	**3.4**	<0.5	<0.5	-	-
Bromochloromethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chloroform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromomethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	**120**	<0.5	<0.5	-	-
2-nitropropane	µg/L	100	<100	<100	<100	-	-
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5	<5	-	-
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-hexanone (MBK)	µg/L	5	<5	<5	<5	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	**1.0**	<0.5	<0.5	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Chlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	<1	-	-

VOCs in Water [AN433] Tested: 15/6/2022 (continued)

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003	GWQD1 WATER - 4/6/2022 SE232924.004	GWTB1 WATER - 4/6/2022 SE232924.005
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Bromobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-propylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
tert-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
sec-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	<0.3	-	-
p-isopropyltoluene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
n-butylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	<0.5	-	-
Total VOC	µg/L	10	130	<10	<10	-	-

VOCs in Water [AN433] Tested: 15/6/2022 (continued)

PARAMETER	UOM	LOR	GWTS1 WATER - 4/6/2022 SE232924.006	QR1 WATER - 4/6/2022 SE232924.007
Benzene	µg/L	0.5	[102%]	<0.5
Toluene	µg/L	0.5	[102%]	<0.5
Ethylbenzene	µg/L	0.5	[100%]	<0.5
m/p-xylene	µg/L	1	[100%]	<1
o-xylene	µg/L	0.5	[100%]	<0.5
Total Xylenes	µg/L	1.5	-	<1.5
Total BTEX	µg/L	3	-	<3
Naphthalene (VOC)	µg/L	0.5	[101%]	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5	-	-
Chloromethane	µg/L	5	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	-	-
Bromomethane	µg/L	10	-	-
Chloroethane	µg/L	5	-	-
Trichlorofluoromethane	µg/L	1	-	-
Acetone (2-propanone)	µg/L	10	-	-
Iodomethane	µg/L	5	-	-
1,1-dichloroethene	µg/L	0.5	-	-
Acrylonitrile	µg/L	0.5	-	-
Dichloromethane (Methylene chloride)	µg/L	5	-	-
Allyl chloride	µg/L	2	-	-
Carbon disulfide	µg/L	2	-	-
trans-1,2-dichloroethene	µg/L	0.5	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	-	-
1,1-dichloroethane	µg/L	0.5	-	-
Vinyl acetate	µg/L	10	-	-
MEK (2-butanone)	µg/L	10	-	-
cis-1,2-dichloroethene	µg/L	0.5	-	-
Bromochloromethane	µg/L	0.5	-	-
Chloroform (THM)	µg/L	0.5	-	-
2,2-dichloropropane	µg/L	0.5	-	-
1,2-dichloroethane	µg/L	0.5	-	-
1,1,1-trichloroethane	µg/L	0.5	-	-
1,1-dichloropropene	µg/L	0.5	-	-
Carbon tetrachloride	µg/L	0.5	-	-
Dibromomethane	µg/L	0.5	-	-
1,2-dichloropropane	µg/L	0.5	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	-	-
2-nitropropane	µg/L	100	-	-
Bromodichloromethane (THM)	µg/L	0.5	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	-	-
cis-1,3-dichloropropene	µg/L	0.5	-	-
trans-1,3-dichloropropene	µg/L	0.5	-	-
1,1,2-trichloroethane	µg/L	0.5	-	-
1,3-dichloropropane	µg/L	0.5	-	-
Dibromochloromethane (THM)	µg/L	0.5	-	-
2-hexanone (MBK)	µg/L	5	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	-	-
Chlorobenzene	µg/L	0.5	-	-
Bromoform (THM)	µg/L	0.5	-	-
cis-1,4-dichloro-2-butene	µg/L	1	-	-
Styrene (Vinyl benzene)	µg/L	0.5	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	-	-
1,2,3-trichloropropane	µg/L	0.5	-	-
trans-1,4-dichloro-2-butene	µg/L	1	-	-

VOCs in Water [AN433] Tested: 15/6/2022 (continued)

PARAMETER	UOM	LOR	GWTS1 WATER - 4/6/2022 SE232924.006	QR1 WATER - 4/6/2022 SE232924.007
Isopropylbenzene (Cumene)	µg/L	0.5	-	-
Bromobenzene	µg/L	0.5	-	-
n-propylbenzene	µg/L	0.5	-	-
2-chlorotoluene	µg/L	0.5	-	-
4-chlorotoluene	µg/L	0.5	-	-
1,3,5-trimethylbenzene	µg/L	0.5	-	-
tert-butylbenzene	µg/L	0.5	-	-
1,2,4-trimethylbenzene	µg/L	0.5	-	-
sec-butylbenzene	µg/L	0.5	-	-
1,3-dichlorobenzene	µg/L	0.5	-	-
1,4-dichlorobenzene	µg/L	0.3	-	-
p-isopropyltoluene	µg/L	0.5	-	-
1,2-dichlorobenzene	µg/L	0.5	-	-
n-butylbenzene	µg/L	0.5	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	-	-
1,2,4-trichlorobenzene	µg/L	0.5	-	-
Hexachlorobutadiene	µg/L	0.5	-	-
1,2,3-trichlorobenzene	µg/L	0.5	-	-
Total VOC	µg/L	10	-	-

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 15/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003	GWQD1 WATER - 4/6/2022 SE232924.004	QR1 WATER - 4/6/2022 SE232924.007
TRH C6-C9	µg/L	40	**170**	<40	<40	**170**	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	**170**	<50	<50	**170**	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	**170**	<50	<50	**170**	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 9/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003	GWQD1 WATER - 4/6/2022 SE232924.004	QR1 WATER - 4/6/2022 SE232924.007
TRH C10-C14	µg/L	50	<50	<50	**70**	**150**	<50
TRH C15-C28	µg/L	200	<200	<200	<200	<200	<200
TRH C29-C36	µg/L	200	<200	<200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200	<200	<200
TRH >C10-C16	µg/L	60	<60	<60	**72**	**130**	<60
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	**72**	**130**	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	<500	<500
TRH C10-C40	µg/L	320	<320	<320	<320	<320	<320

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 9/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003
Naphthalene	µg/L	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1	<1

OC Pesticides in Water [AN420] Tested: 9/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003
Hexachlorobenzene (HCB)	µg/L	0.1	<0.1	<0.1	<0.1
Alpha BHC	µg/L	0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	µg/L	0.1	<0.1	<0.1	<0.1
Heptachlor	µg/L	0.1	<0.1	<0.1	<0.1
Aldrin	µg/L	0.1	<0.1	<0.1	<0.1
Beta BHC	µg/L	0.1	<0.1	<0.1	<0.1
Delta BHC	µg/L	0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	µg/L	0.1	<0.1	<0.1	<0.1
o,p'-DDE	µg/L	0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	µg/L	0.1	<0.1	<0.1	<0.1
Gamma Chlordane	µg/L	0.1	<0.1	<0.1	<0.1
Alpha Chlordane	µg/L	0.1	<0.1	<0.1	<0.1
trans-Nonachlor	µg/L	0.1	<0.1	<0.1	<0.1
p,p'-DDE	µg/L	0.1	<0.1	<0.1	<0.1
Dieldrin	µg/L	0.1	<0.1	<0.1	<0.1
Endrin	µg/L	0.1	<0.1	<0.1	<0.1
o,p'-DDD	µg/L	0.1	<0.1	<0.1	<0.1
o,p'-DDT	µg/L	0.1	<0.1	<0.1	<0.1
Beta Endosulfan	µg/L	0.1	<0.1	<0.1	<0.1
p,p'-DDD	µg/L	0.1	<0.1	<0.1	<0.1
p,p'-DDT	µg/L	0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	µg/L	0.1	<0.1	<0.1	<0.1
Endrin aldehyde	µg/L	0.1	<0.1	<0.1	<0.1
Methoxychlor	µg/L	0.1	<0.1	<0.1	<0.1
Endrin ketone	µg/L	0.1	<0.1	<0.1	<0.1
Isodrin	µg/L	0.1	<0.1	<0.1	<0.1
Mirex	µg/L	0.1	<0.1	<0.1	<0.1
Total OC	µg/L	1	<1	<1	<1
Total OC	µg/L	1	<1	<1	<1

OP Pesticides in Water [AN420] Tested: 9/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003
Dichlorvos	µg/L	0.5	<0.5	<0.5	<0.5
Dimethoate	µg/L	0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	µg/L	0.5	<0.5	<0.5	<0.5
Fenitrothion	µg/L	0.2	<0.2	<0.2	<0.2
Malathion	µg/L	0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	µg/L	0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	µg/L	0.2	<0.2	<0.2	<0.2
Methidathion	µg/L	0.5	<0.5	<0.5	<0.5
Ethion	µg/L	0.2	<0.2	<0.2	<0.2
Azinphos-methyl	µg/L	0.2	<0.2	<0.2	<0.2

Total Phenolics in Water [AN295] Tested: 9/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003
Total Phenols	mg/L	0.05	<0.05	<0.05	<0.05

Anions by Ion Chromatography in Water [AN245] Tested: 9/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003
Chloride	mg/L	1	**30**	**31**	**240**
Sulfate, SO4	mg/L	1	**17**	**48**	**45**

Alkalinity [AN135] Tested: 14/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003
Total Alkalinity as CaCO3	mg/L	5	<5	<5	<5

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 10/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003
Calcium, Ca	mg/L	0.1	**6.7**	**6.1**	**24**
Magnesium, Mg	mg/L	0.1	**10**	**10**	**20**
Sodium, Na	mg/L	0.1	**23**	**34**	**110**
Potassium, K	mg/L	0.2	**5.2**	**9.1**	**6.6**

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 14/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003	GWQD1 WATER - 4/6/2022 SE232924.004	QR1 WATER - 4/6/2022 SE232924.007
Arsenic, As	µg/L	1	<1	<1	<1	<1	<1
Cadmium, Cd	µg/L	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium, Cr	µg/L	1	<1	<1	<1	<1	<1
Copper, Cu	µg/L	1	1	3	2	<1	<1
Lead, Pb	µg/L	1	<1	<1	1	<1	<1
Nickel, Ni	µg/L	1	4	2	7	4	<1
Zinc, Zn	µg/L	5	13	<5	19	12	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 9/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003	GWQD1 WATER - 4/6/2022 SE232924.004	QR1 WATER - 4/6/2022 SE232924.007
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples [MA-1523] Tested: 14/6/2022

PARAMETER	UOM	LOR	GW_BH1 WATER - 4/6/2022 SE232924.001	GW_BH2 WATER - 4/6/2022 SE232924.002	GW_BH3 WATER - 4/6/2022 SE232924.003
Perfluorobutanoic acid (PFBA)	µg/L	0.002	**0.006**	**0.002**	<0.002
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	**0.007**	**0.007**	<0.002
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	**0.011**	**0.008**	<0.002
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002	<0.002	<0.002
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	**0.002**	**0.002**	<0.002
Perfluorononanoic acid (PFNA)	µg/L	0.004	<0.004	<0.004	<0.004
Perfluorodecanoic acid (PFDA)	µg/L	0.004	<0.004	<0.004	<0.004
Perfluoroundecanoic acid (PFUnA)	µg/L	0.004	<0.004	<0.004	<0.004
Perfluorododecanoic acid (PFDoA)	µg/L	0.004	<0.004	<0.004	<0.004
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.004	<0.004	<0.004	<0.004
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.004	<0.004	<0.004	<0.004
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.008	<0.008	<0.008	<0.008
Perfluorobutane sulfonate (PFBS)	µg/L	0.004	**0.026**	**0.007**	<0.004
Perfluoropentane sulfonate (PFPeS)	µg/L	0.004	<0.004	<0.004	<0.004
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	**0.017**	**0.033**	<0.002
Perfluoroheptane sulfonate (PFHpS)	µg/L	0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	**0.008**	**0.010**	<0.002
Sum of PFHxS and PFOS	µg/L	0.002	**0.025**	**0.043**	<0.002
Perfluorononane sulfonate (PFNS)	µg/L	0.002	<0.002	<0.002	<0.002
Perfluorodecane sulfonate (PFDS)	µg/L	0.002	<0.002	<0.002	<0.002
Perfluorododecane sulfonate (PFDoS)	µg/L	0.002	<0.002	<0.002	<0.002
1H,1H,2H,2H-Perfluorohexane sulfonate (4:2) (4:2 FTS)	µg/L	0.002	<0.002	<0.002	<0.002
1H,1H,2H,2H-Perfluorooctane sulfonate (6:2) (6:2 FTS)	µg/L	0.002	<0.002	<0.002	<0.002
1H,1H,2H,2H-Perfluorodecane sulfonate (8:2) (8:2 FTS)	µg/L	0.002	<0.002	<0.002	<0.002
Perfluorooctane sulfonamide (PFOSA)	µg/L	0.008	<0.008	<0.008	<0.008
N-Methylperfluorooctane sulfonamide (N-MeFOSA)	µg/L	0.01	<0.01	<0.01	<0.01
N-Ethylperfluorooctane sulfonamide (N-EtFOSA)	µg/L	0.01	<0.01	<0.01	<0.01
2-(N-Methylperfluorooctane sulfonamido)-ethanol	µg/L	0.01	<0.01	<0.01	<0.01
2-(N-Ethylperfluorooctane sulfonamido)-ethanol	µg/L	0.01	<0.01	<0.01	<0.01
N-Methylperfluorooctanesulfonamidoacetic acid	µg/L	0.01	<0.01	<0.01	<0.01
N-Ethylperfluorooctanesulfonamidoacetic Acid	µg/L	0.01	<0.01	<0.01	<0.01
Total of PFAS (n=30)	µg/L	0.04	**0.08**	**0.07**	<0.04

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN135	Alkalinity (and forms of) by Titration: The sample is titrated with standard acid to pH 8.3 (P titre) and pH 4.5 (T titre) and permanent and/or total alkalinity calculated. The results are expressed as equivalents of calcium carbonate or recalculated as bicarbonate, carbonate and hydroxide. Reference APHA 2320. Internal Reference AN135
AN245	Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO2, NO3 and SO4 are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B
AN295	The water sample or extract of sample is distilled in a phosphoric acid stream. Phenolic compounds in the distillate react with a reagent stream of potassium hexacyanoferrate(III) and 4-Amino-2,3-dimethyl-3-pryazolin-5-one in an alkaline medium to form a coloured complex which is analysed spectrophotometrically onboard a continuous flow analyser.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN320	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components .
AN320	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements . Reference APHA 3120 B.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). Where F2 is corrected for Naphthalene, the VOC data for Naphthalene is used.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoveerable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
Calculation	Free and Total Carbon Dioxide may be calculated using alkalinity forms only when the samples TDS is <500mg/L. If TDS is >500mg/L free or total carbon dioxide cannot be reported . APHA4500CO2 D.
MA-1523	This method covers the analysis of per- and polyfluoroalkyl substances (PFAS) in aqueous, solid and biosolid samples and solvent extracts, determined as the total of linear and branched isomers. After spiking with isotopically labelled quantification surrogates and clean-up via SPE cartridges sample extracts are analysed by liquid chromatography/mass spectrometry (LC-MS/MS). PFAS concentrations are determined by isotope dilution quantification.

FOOTNOTES

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

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

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

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

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

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

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

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

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

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**E25568 Brookvale**
Order Number	**SE232924**
Samples	7

LABORATORY DETAILS

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SGS Reference	**ME327309 R0**
Date Received	09 Jun 2022
Date Reported	14 Jun 2022

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(14420).

MA-1523: Majority of surrogate recoveries within acceptance criteria.

SIGNATORIES

Andrew WRIGHT
Senior Chemist

Parameter	Units	LOR	Sample Number: ME327309.001 Sample Matrix: Water Sample Date: 04 Jun 2022 Sample Name: SE232924.001	ME327309.002 Water 04 Jun 2022 SE232924.002	ME327309.003 Water 04 Jun 2022 SE232924.003	ME327309.004 Water 04 Jun 2022 SE232924.004
Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples	**Method: MA-1523**	**Tested: 9/6/2022**				
Perfluorobutanoic acid (PFBA)	µg/L	0.002	**0.006**	**0.002**	<0.002	-
Perfluoropentanoic acid (PFPeA)	µg/L	0.002	**0.007**	**0.007**	<0.002	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002	**0.011**	**0.008**	<0.002	-
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002	<0.002	<0.002	<0.002	-
Perfluorooctanoic Acid (PFOA)	µg/L	0.002	**0.002**	**0.002**	<0.002	-
Perfluorononanoic acid (PFNA)	µg/L	0.004	<0.004	<0.004	<0.004	-
Perfluorodecanoic acid (PFDA)	µg/L	0.004	<0.004	<0.004	<0.004	-
Perfluoroundecanoic acid (PFUnA)	µg/L	0.004	<0.004	<0.004	<0.004	-
Perfluorododecanoic acid (PFDoA)	µg/L	0.004	<0.004	<0.004	<0.004	-
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.004	<0.004	<0.004	<0.004	-
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.004	<0.004	<0.004	<0.004	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.008	<0.008	<0.008	<0.008	-
Perfluorobutane sulfonate (PFBS)	µg/L	0.004	**0.026**	**0.007**	<0.004	-
Perfluoropentane sulfonate (PFPeS)	µg/L	0.004	<0.004	<0.004	<0.004	-
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002	**0.017**	**0.033**	<0.002	-
Perfluoroheptane sulfonate (PFHpS)	µg/L	0.002	<0.002	<0.002	<0.002	-
Perfluorooctane sulfonate (PFOS)	µg/L	0.002	**0.008**	**0.010**	<0.002	-
Sum of PFHxS and PFOS	µg/L	0.002	**0.025**	**0.043**	<0.002	-
Perfluorononane sulfonate (PFNS)	µg/L	0.002	<0.002	<0.002	<0.002	-
Perfluorodecane sulfonate (PFDS)	µg/L	0.002	<0.002	<0.002	<0.002	-
Perfluorododecane sulfonate (PFDoS)	µg/L	0.002	<0.002	<0.002	<0.002	-
1H,1H,2H,2H-Perfluorohexane sulfonate (4:2) (4:2 FTS)	µg/L	0.002	<0.002	<0.002	<0.002	-
1H,1H,2H,2H-Perfluorooctane sulfonate (6:2) (6:2 FTS)	µg/L	0.002	<0.002	<0.002	<0.002	-
1H,1H,2H,2H-Perfluorodecane sulfonate (8:2) (8:2 FTS)	µg/L	0.002	<0.002	<0.002	<0.002	-
Perfluorooctane sulfonamide (PFOSA)	µg/L	0.008	<0.008	<0.008	<0.008	-
N-Methylperfluorooctane sulfonamide (N-MeFOSA)	µg/L	0.01	<0.01	<0.01	<0.01	-
N-Ethylperfluorooctane sulfonamide (N-EtFOSA)	µg/L	0.01	<0.01	<0.01	<0.01	-
2-(N-Methylperfluorooctane sulfonamido)-ethanol	µg/L	0.01	<0.01	<0.01	<0.01	-
2-(N-Ethylperfluorooctane sulfonamido)-ethanol	µg/L	0.01	<0.01	<0.01	<0.01	-
N-Methylperfluorooctanesulfonamidoacetic acid	µg/L	0.01	<0.01	<0.01	<0.01	-
N-Ethylperfluorooctanesulfonamidoacetic Acid	µg/L	0.01	<0.01	<0.01	<0.01	-
Total of PFAS (n=30)	µg/L	0.04	**0.08**	**0.07**	<0.04	-
(13C4-PFBA) Isotopically Labelled Internal Recovery	%	-	**101**	**99**	**99**	-
(13C5-PFPeA) Isotopically Labelled Internal Recovery	%	-	**101**	**100**	**102**	-
(13C5-PFHxA) Isotopically Labelled Internal Recovery	%	-	**117**	**112**	**100**	-
(13C4-PFHpA) Isotopically Labelled Internal Recovery	%	-	**104**	**97**	**102**	-
(13C4_PFOA) Isotopically Labelled Internal Recovery	%	-	**107**	**105**	**102**	-
(13C9-PFNA) Isotopically Labelled Internal Recovery	%	-	**91**	**85**	**93**	-
(13C6-PFDA) Isotopically Labelled Internal Recovery	%	-	**99**	**91**	**85**	-
(13C7-PFUdA) Isotopically Labelled Internal Recovery	%	-	**90**	**108**	**93**	-
(13C2-PFDoA) Isotopically Labelled Internal Recovery	%	-	**86**	**117**	**87**	-
(13C2_PFTeDA) Isotopically Labelled Internal Recovery	%	-	**87**	**141**	**114**	-
(13C2-PFHxDA) Isotopically Labelled Internal Recovery	%	-	**147**	**273**	**191**	-
(13C3-PFBS) Isotopically Labelled Internal Recovery	%	-	**117**	**109**	**88**	-
(13C3-PFHxS) Isotopically Labelled Internal Recovery	%	-	**98**	**96**	**92**	-
(13C8-PFOS) Isotopically Labelled Internal Recovery	%	-	**77**	**86**	**107**	-
(13C2-4:2 FTS) Isotopically Labelled Internal Recovery	%	-	**102**	**96**	**70**	-
(13C2-6:2 FTS) Isotopically Labelled Internal Recovery	%	-	**99**	**90**	**74**	-
(13C2-8:2 FTS) Isotopically Labelled Internal Recovery	%	-	**57**	**89**	**84**	-
(13C8-PFOSA) Isotopically Labelled Internal Recovery	%	-	**83**	**57**	**58**	-
(D3-N-MeFOSA) Isotopically Labelled Internal Recovery	%	-	**63**	**65**	**60**	-
(D5-N-EtFOSA) Isotopically Labelled Internal Recovery	%	-	**77**	**79**	**63**	-
(D7-N-MeFOSE) Isotopically Labelled Internal Recovery	%	-	**83**	**80**	**64**	-
(D9-N-EtFOSE) Isotopically Labelled Internal Recovery	%	-	**71**	**78**	**58**	-
(D3-N-MeFOSAA) Isotopically Labelled Internal Recovery	%	-	**75**	**106**	**93**	-
(D5-N-EtFOSAA) Isotopically Labelled Internal Recovery	%	-	**60**	**80**	**68**	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	ME327309.005 Water 04 Jun 2022 SE232924.005	ME327309.006 Water 04 Jun 2022 SE232924.006	ME327309.007 Water 04 Jun 2022 SE232924.007
Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples	**Method: MA-1523**	**Tested: 10/6/2022**				
Perfluorobutanoic acid (PFBA)	µg/L	0.002		-	-	-
Perfluoropentanoic acid (PFPeA)	µg/L	0.002		-	-	-
Perfluorohexanoic acid (PFHxA)	µg/L	0.002		-	-	-
Perfluoroheptanoic acid (PFHpA)	µg/L	0.002		-	-	-
Perfluorooctanoic Acid (PFOA)	µg/L	0.002		-	-	-
Perfluorononanoic acid (PFNA)	µg/L	0.004		-	-	-
Perfluorodecanoic acid (PFDA)	µg/L	0.004		-	-	-
Perfluoroundecanoic acid (PFUnA)	µg/L	0.004		-	-	-
Perfluorododecanoic acid (PFDoA)	µg/L	0.004		-	-	-
Perfluorotridecanoic acid (PFTrDA)	µg/L	0.004		-	-	-
Perfluorotetradecanoic acid (PFTeDA)	µg/L	0.004		-	-	-
Perfluorohexadecanoic acid (PFHxDA)	µg/L	0.008		-	-	-
Perfluorobutane sulfonate (PFBS)	µg/L	0.004		-	-	-
Perfluoropentane sulfonate (PFPeS)	µg/L	0.004		-	-	-
Perfluorohexane sulfonate (PFHxS)	µg/L	0.002		-	-	-
Perfluoroheptane sulfonate (PFHpS)	µg/L	0.002		-	-	-
Perfluorooctane sulfonate (PFOS)	µg/L	0.002		-	-	-
Sum of PFHxS and PFOS	µg/L	0.002		-	-	-
Perfluorononane sulfonate (PFNS)	µg/L	0.002		-	-	-
Perfluorodecane sulfonate (PFDS)	µg/L	0.002		-	-	-
Perfluorododecane sulfonate (PFDoS)	µg/L	0.002		-	-	-
1H,1H,2H,2H-Perfluorohexane sulfonate (4:2) (4:2 FTS)	µg/L	0.002		-	-	-
1H,1H,2H,2H-Perfluorooctane sulfonate (6:2) (6:2 FTS)	µg/L	0.002		-	-	-
1H,1H,2H,2H-Perfluorodecane sulfonate (8:2) (8:2 FTS)	µg/L	0.002		-	-	-
Perfluorooctane sulfonamide (PFOSA)	µg/L	0.008		-	-	-
N-Methylperfluorooctane sulfonamide (N-MeFOSA)	µg/L	0.01		-	-	-
N-Ethylperfluorooctane sulfonamide (N-EtFOSA)	µg/L	0.01		-	-	-
2-(N-Methylperfluorooctane sulfonamido)-ethanol	µg/L	0.01		-	-	-
2-(N-Ethylperfluorooctane sulfonamido)-ethanol	µg/L	0.01		-	-	-
N-Methylperfluorooctanesulfonamidoacetic acid	µg/L	0.01		-	-	-
N-Ethylperfluorooctanesulfonamidoacetic Acid	µg/L	0.01		-	-	-
Total of PFAS (n=30)	µg/L	0.04		-	-	-
(13C4-PFBA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C5-PFPeA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C5-PFHxA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C4-PFHpA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C4_PFOA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C9-PFNA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C6-PFDA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C7-PFUdA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C2-PFDoA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C2_PFTeDA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C2-PFHxDA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C3-PFBS) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C3-PFHxS) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C8-PFOS) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C2-4:2 FTS) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C2-6:2 FTS) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C2-8:2 FTS) Isotopically Labelled Internal Recovery	%	-		-	-	-
(13C8-PFOSA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(D3-N-MeFOSA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(D5-N-EtFOSA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(D7-N-MeFOSE) Isotopically Labelled Internal Recovery	%	-		-	-	-
(D9-N-EtFOSE) Isotopically Labelled Internal Recovery	%	-		-	-	-
(D3-N-MeFOSAA) Isotopically Labelled Internal Recovery	%	-		-	-	-
(D5-N-EtFOSAA) Isotopically Labelled Internal Recovery	%	-		-	-	-

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples Method: MA-1523

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Perfluorobutanoic acid (PFBA)	LB051634	µg/L	0.002	<0.002	15%	NA
Perfluoropentanoic acid (PFPeA)	LB051634	µg/L	0.002	<0.002	8%	NA
Perfluorohexanoic acid (PFHxA)	LB051634	µg/L	0.002	<0.002	6%	NA
Perfluoroheptanoic acid (PFHpA)	LB051634	µg/L	0.002	<0.002	0%	64%
Perfluorooctanoic Acid (PFOA)	LB051634	µg/L	0.002	<0.002	23%	74%
Perfluorononanoic acid (PFNA)	LB051634	µg/L	0.004	<0.004	0%	97%
Perfluorodecanoic acid (PFDA)	LB051634	µg/L	0.004	<0.004	0%	79%
Perfluoroundecanoic acid (PFUnA)	LB051634	µg/L	0.004	<0.004	0%	72%
Perfluorododecanoic acid (PFDoA)	LB051634	µg/L	0.004	<0.004	0%	90%
Perfluorotridecanoic acid (PFTrDA)	LB051634	µg/L	0.004	<0.004	0%	70%
Perfluorotetradecanoic acid (PFTeDA)	LB051634	µg/L	0.004	<0.004	0%	54%
Perfluorohexadecanoic acid (PFHxDA)	LB051634	µg/L	0.008	<0.008	0%	NA
Perfluorobutane sulfonate (PFBS)	LB051634	µg/L	0.004	<0.004	4%	NA
Perfluoropentane sulfonate (PFPeS)	LB051634	µg/L	0.004	<0.004	0%	NA
Perfluorohexane sulfonate (PFHxS)	LB051634	µg/L	0.002	<0.002	1%	NA
Perfluoroheptane sulfonate (PFHpS)	LB051634	µg/L	0.002	<0.002	0%	NA
Perfluorooctane sulfonate (PFOS)	LB051634	µg/L	0.002	<0.002	35%	122%
Sum of PFHxS and PFOS	LB051634	µg/L	0.002	<0.002	10%	NA
Perfluorononane sulfonate (PFNS)	LB051634	µg/L	0.002	<0.002	0%	NA
Perfluorodecane sulfonate (PFDS)	LB051634	µg/L	0.002	<0.002	0%	NA
Perfluorododecane sulfonate (PFDoS)	LB051634	µg/L	0.002	<0.002	0%	NA
1H,1H,2H,2H-Perfluorohexane sulfonate (4:2) (4:2 FTS)	LB051634	µg/L	0.002	<0.002	0%	NA
1H,1H,2H,2H-Perfluorooctane sulfonate (6:2) (6:2 FTS)	LB051634	µg/L	0.002	<0.002	0%	NA
1H,1H,2H,2H-Perfluorodecane sulfonate (8:2) (8:2 FTS)	LB051634	µg/L	0.002	<0.002	0%	NA
Perfluorooctane sulfonamide (PFOSA)	LB051634	µg/L	0.008	<0.008	0%	60%
N-Methylperfluorooctane sulfonamide (N-MeFOSA)	LB051634	µg/L	0.01	<0.01	0%	NA
N-Ethylperfluorooctane sulfonamide (N-EtFOSA)	LB051634	µg/L	0.01	<0.01	0%	NA
2-(N-Methylperfluorooctane sulfonamido)-ethanol (N-MeFOSE)	LB051634	µg/L	0.01	<0.01	0%	NA
2-(N-Ethylperfluorooctane sulfonamido)-ethanol (N-EtFOSE)	LB051634	µg/L	0.01	<0.01	0%	NA
N-Methylperfluorooctanesulfonamidoacetic acid (N_MeFOSAA)	LB051634	µg/L	0.01	<0.01	0%	NA
N-Ethylperfluorooctanesulfonamidoacetic Acid (N-EtFOSAA)	LB051634	µg/L	0.01	<0.01	0%	NA
Total of PFAS (n=30)	LB051634	µg/L	0.04	<0.04	4%	NA
(13C4-PFBA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	99%	1%	101%
(13C5-PFPeA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	95%	7%	98%
(13C5-PFHxA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	125%	23%	130%
(13C4-PFHpA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	103%	15%	125%
(13C4_PFOA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	86%	5%	110%
(13C9-PFNA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	89%	6%	95%
(13C6-PFDA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	90%	40%	112%
(13C7-PFUdA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	99%	25%	81%
(13C2-PFDoA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	78%	9%	76%
(13C2_PFTeDA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	69%	20%	59%
(13C2-PFHxDA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	91%	18%	100%
(13C3-PFBS) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	150%	24%	149%
(13C3-PFHxS) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	97%	6%	104%
(13C8-PFOS) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	116%	5%	122%
(13C2-4:2 FTS) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	149%	36%	155%
(13C2-6:2 FTS) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	113%	22%	110%
(13C2-8:2 FTS) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	105%	40%	83%
(13C8-PFOSA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	100%	55%	122%
(D3-N-MeFOSA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	100%	37%	110%
(D5-N-EtFOSA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	100%	47%	131%
(D7-N-MeFOSE) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	100%	49%	139%
(D9-N-EtFOSE) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	100%	41%	121%
(D3-N-MeFOSAA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	100%	14%	133%
(D5-N-EtFOSAA) Isotopically Labelled Internal Recovery Standard	LB051634	%	-	100%	38%	134%

METHOD SUMMARY

ME327309 R0

METHOD	METHODOLOGY SUMMARY
MA-1523	This method covers the analysis of per- and polyfluoroalkyl substances (PFAS) in aqueous, solid and biosolid samples and solvent extracts, determined as the total of linear and branched isomers. After spiking with isotopically labelled quantification surrogates and clean-up via SPE cartridges sample extracts are analysed by liquid chromatography/mass spectrometry (LC-MS/MS). PFAS concentrations are determined by isotope dilution quantification.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
		QFL	QC result is below the lower tolerance
**	Indicative data, theoretical holding time exceeded.	-	The sample was not analysed for this analyte
***	Indicates that both * and ** apply.	NVL	Not Validated

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

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

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

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

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

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

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

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

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CERTIFICATE OF ANALYSIS 297658

Client Details

Client	EI Australia
Attention	Lab Email
Address	Suite 6.01, 55 Miller Street, Pyrmont, NSW, 2009

Sample Details

Your Reference	**E25568, Brookvale**
Number of Samples	1 Water
Date samples received	09/06/2022
Date completed instructions received	09/06/2022

Analysis Details

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

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

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

Report Details

Date results requested by	17/06/2022
Date of Issue	16/06/2022

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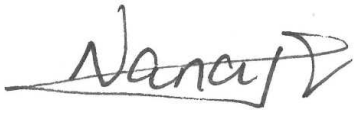
Results Approved By
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Josh Williams, Organics and LC Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		297658-1
Your Reference	UNITS	GWQT1
Date Sampled		4/06/2022
Type of sample		Water
Date extracted	-	10/06/2022
Date analysed	-	11/06/2022
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	119
Surrogate toluene-d8	%	99
Surrogate 4-BFB	%	99

svTRH (C10-C40) in Water		
Our Reference		297658-1
Your Reference	UNITS	GWQT1
Date Sampled		4/06/2022
Type of sample		Water
Date extracted	-	15/06/2022
Date analysed	-	16/06/2022
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	87

HM in water - dissolved		
Our Reference		297658-1
Your Reference	UNITS	GWQT1
Date Sampled		4/06/2022
Type of sample		Water
Date prepared	-	14/06/2022
Date analysed	-	14/06/2022
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	2
Zinc-Dissolved	µg/L	1

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			10/06/2022	[NT]	[NT]	[NT]	[NT]	10/06/2022	[NT]
Date analysed	-			11/06/2022	[NT]	[NT]	[NT]	[NT]	11/06/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	86	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	[NT]	[NT]	[NT]	[NT]	86	[NT]
Benzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Toluene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
m+p-xylene	µg/L	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	90	[NT]
o-xylene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Naphthalene	µg/L	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	118	[NT]	[NT]	[NT]	[NT]	126	[NT]
Surrogate toluene-d8	%		Org-023	99	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate 4-BFB	%		Org-023	98	[NT]	[NT]	[NT]	[NT]	99	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			15/06/2022	[NT]	[NT]	[NT]	[NT]	15/06/2022	[NT]
Date analysed	-			15/06/2022	[NT]	[NT]	[NT]	[NT]	15/06/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	94	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	103	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	94	[NT]
Surrogate o-Terphenyl	%		Org-020	92	[NT]	[NT]	[NT]	[NT]	95	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			14/06/2022	[NT]	[NT]	[NT]	[NT]	14/06/2022	[NT]
Date analysed	-			14/06/2022	[NT]	[NT]	[NT]	[NT]	14/06/2022	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	92	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]

Result Definitions

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

Quality Control Definitions

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

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

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

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

Laboratory Acceptance Criteria

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

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

Spikes for Physical and Aggregate Tests are not applicable.

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

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

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

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

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

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

Measurement Uncertainty estimates are available for most tests upon request.

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

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

Appendix I – QA/QC Assessment

I1.1 Quality Assurance / Quality Control Program

Quality assurance comprises an assessment of the reliability of the field procedures and laboratory results against standard industry practices and the SAQP. A summary of the project QA/QC measures incorporated into this DSI is presented in **Table I-1**.

Table I-1 Project QC Measures

Task	Description	Project
Field QA/QC		
General	Work was to be undertaken following standard field procedures which are based on industry accepted standard practice.	Soil samples were collected directly from the augers. Soil samples were placed in 250 gram glass jars, which were filled to minimise headspace, and sealed using Teflon-coated lids. PFAS samples were placed in a dedicated Teflon free soil jar provided by the laboratory. Groundwater samples were obtained using sample bottles/vials provided by the laboratory.
	All fieldwork was supervised by a suitably qualified and experienced scientist or engineer.	Yes
Soil Screening with PID	The PID was serviced and calibrated as per manufacturer requirements. PID calibrated at the beginning of each day of fieldwork.	Yes
Equipment Decontamination	Sampling equipment to be decontaminated after the collection of each soil sample by washing with phosphate-free detergent (such as Decon 90 or Alconox) and potable water, followed by a final distilled water rinse. One rinsate blank would be collected and analysed for the primary contaminants. All results should be non-detect.	Yes Two rinsate samples were collected in total. One was collected during the soil investigation on 28 May 2022 and the other was collected during the groundwater monitoring event on 4 June 2022. All results were reported as below the detection limits.
Transport	Samples were stored in a chilled (with ice) cooler box and transported to the laboratories. To ensure the integrity of the samples from collection to receipt by the analytical laboratory, samples were sent by courier to the laboratories under 'chain of custody' describing sample preservation and transport duration.	Yes
Trip Blanks	Trip Blank (TB) samples were to be prepared and analysed by the primary laboratory for BTEX. Analytical results for this sample were below the laboratory LOR, indicating that ideal sample transport and handling conditions were achieved.	Two trip blank samples prepared by the primary laboratory, were analysed for BTEX during soil and groundwater testing. The results were reported below the laboratory LOR, indicating that sample transport acceptable.

Task	Description	Project
Trip Spikes	Trip spike (TS) samples were to be submitted to the primary laboratory for BTEX analysis, the results for which were reported within the RPD acceptance levels for trip spike recovery. It was therefore concluded that satisfactory sample transport and handling conditions were achieved.	Two trip spike samples were submitted to the primary laboratory for BTEX analysis, the results of which were reported within the RPD acceptance levels for trip spike recovery. It was therefore concluded that satisfactory sample transport and handling conditions were achieved.
Duplicates	Field duplicate samples were analysed as follows: ▪ intra-laboratory duplicate samples at a rate of 1 in 20 primary samples (as per NEPM); and ▪ inter-laboratory duplicate samples at a rate of 1 in 20 primary samples (as per NEPM). Field and laboratory acceptable limits between 30-50% RPD as stated by AS4482.1–2005. RPDs that exceed this range may be considered acceptable where: ▪ Results are less than 10 times the limits of reporting (LOR); ▪ Results are less than 20 times the LOR and the RPD is less than 50%; or ▪ Heterogeneous materials or volatile compounds are encountered. Non-compliance is to be documented in the report and the sample re-analysed or a higher level conservatively adopted.	The required sampling density of 1 per 20 duplicated primary samples was achieved and sufficient for the investigation being the exception the soil inter-laboratory duplicate sample since the secondary laboratory was not able to locate the sample (lost). Laboratory duplicates prepared and analysed. Minor non-conformance, with negligible effects on data use for interpretative purposes. Field QC samples and calculated RPD values are presented in **Table I-5**. Copies of laboratory reports are included in **Appendix H**.
<u>Laboratory QA/QC</u>		
Laboratory Analysis	The laboratories selected are NATA accredited for the analytes selected and perform their own internal QA/QC programs.	Yes SGS - primary laboratory Envirolab - secondary laboratory Laboratory QA/QC analyses are included in **Appendix J.**
	Appropriate detection limits were used for the analyses to be undertaken.	Practical Quantitation Limits for all tested parameters during the DSI are presented in summary tables **Table QC3** in **Appendix J.**
Holding Times	Holding times are the maximum permissible elapsed time in days from the collection of the sample to its extraction and/or analysis. All extraction and analyses should be completed within standard guidelines.	Assessment of holding times has been undertaken by the laboratory. Minor non-conformance (two soil samples for Total Phenolics with 2 days outside the holding time), with negligible effects on data use for interpretative purposes.

Task	Description	Project
Method Blanks	The method blank sample is laboratory prepared, containing the reagents used to prepare the sample for final analysis. The purpose of this procedure is to identify contamination in the reagent materials and assess potential bias in the sample analysis due to contaminated reagents. The QC criterion aims to find no detectable contamination in the reagents. Each analysis procedure should be subject to a method blank analysis. The results of each should indicate that contaminants were not detected.	Assessment of method blanks has been undertaken by the laboratory.
Laboratory Duplicates	Laboratory duplicates are field samples that are split in the laboratory and subsequently analysed a number of times in the same batch. These sub-samples are selected by the laboratory to assess the accuracy and precision of the analytical method. The selected laboratories should undertake QA/QC procedures such as calibration standards, laboratory control samples, surrogates, reference materials, sample duplicates and matrix spikes. Intra-laboratory duplicates should be performed at a frequency of 1 per 10 samples.	Assessment of laboratory duplicates has been undertaken by the laboratory.
Laboratory Control Standard	A laboratory control standard is a standard reference material used in preparing primary standards. The concentration should be equivalent to a mid-range standard to confirm the primary calibration. Laboratory control samples should be performed on a frequency of 1 per 20 samples or at least one per analytical run.	Assessment of laboratory control standards has been undertaken by the laboratory.
Matrix Spikes	Matric spikes are field samples to which a predetermined stock solution of known concentration has been added. The samples are then analysed for recovery of the known addition. Recoveries should be within the stated laboratory control limits of 70 to 130% and duplicates should have RPDs of less than 50%.	Assessment of matrix spikes has been undertaken by the laboratory. Duplicate RPD outside of acceptable range for PAH and metals (lead and zinc) in soil samples. Minor non-conformance, with negligible effects on data use for interpretative purposes.

Task	Description	Project
Surrogate Spikes	Surrogate spikes provide a means of checking, for every analysis that no gross errors have occurred at any stage of the procedure leading to significant analyte loss. Recoveries should be within the stated laboratory control limits of 70 to 130%.	Assessment of surrogate spikes has been undertaken by the laboratory. Minor non-conformance, with negligible effects on data use for interpretative purposes.
Conclusion	The QA/QC indicators should either all comply with the required standards or showed no variations that would have no significant effect on the quality of the data.	Assessment of the investigation QA/QC is presented in the following sections.

I1.2 Calculation of Relative Percentage Difference

The RPD values were calculated using the following equation:

$$RPD = \frac{|C_O - C_R|}{[(C_O + C_R)/2]} \times 100$$

Where:

C_O = Concentration obtained for the primary sample; and

C_R = Concentration obtained for the blind replicate or split duplicate sample.

I2.1 Field QA/QC

The field (intra- / inter- laboratory) duplicate samples collected during the works are summarised in **Table I-2**. Inter-lab duplicates were analysed by the secondary laboratory, Envirolab.

Table I-2 Field QC Sampling Program

Matrix	Primary QA Sample	Duplicate (Primary Lab)	Triplicate (Secondary Lab)	Total Duplicates
Soil	BH3_0.2-0.3	QD1	-	1
Groundwater	GW-BH1	GWQD1	-	1
	GW-BH2	-	GWQT1	1

I2.2 Field Data Quality Indicators

A discussion of the field data quality indicators is presented in **Table I-3** below.

Table I-3 Field Data Quality Indicators

DQI	Item	Conformance
Precision Measure of the variability (or reproducibility) of data.	SOPs appropriate and complied with	**Yes**
Accuracy Quantitative measure of the closeness of reported data to the true values.	SOPs appropriate and complied with	**Yes**
	Calibration of instruments against known standards	**Yes**
Representativeness Confidence the data are representative of each media present on the site.	Appropriate media sampled according to SAQP	**Yes**
	Each media identified in SAQP sampled	**Yes**
Completeness Percentage of useable data from sampling episode (set).	Each critical location sampled	**Yes**
	SAQP appropriate and complied with	**Yes**
	Appropriate number of field duplicate samples taken	**Yes**
	Experienced sampler	**Yes**
	Field documentation correct	**Yes**
Comparability Confidence [expressed qualitatively] that data may be considered to be equivalent for each sampling and analytical event.	Same sampling method used on each occasion/location	**Yes**
	Experienced sampler	**Yes**
	Same type of samples collected (filtered, size, fractions)	**Yes**

I2.3 Conclusion for the Field QA/QC

All field work, including equipment decontamination and sample preservation and transport, was conducted in accordance with the SAQP and SOPs, which were devised with reference to industry-approved guidelines. Appropriate QC measures were integrated into each sampling event and the DQI were met, or if not, the minor non-conformances had negligible effects on the data use for interpretative purposes.

All samples, including field QC samples, were transported to the primary and secondary laboratories under chilled conditions, using strict COC procedures. Relevant documents (COC forms) were presented with the samples at the times of delivery. All supporting documents (COCs and SRAs) were completed in full and signed, where appropriate. Copies of these were included in **Appendix G**. EI considered the field QA/QC program carried out during the DSI to be appropriate.

I2.4 Laboratory QA/QC

Primary and intra-laboratory duplicate samples were analysed by SGS (located in Alexandria NSW), with inter-laboratory duplicate samples analysed by Envirolab (located in Chatswood NSW). All laboratories are accredited by NATA for the analyses undertaken. A discussion of the laboratory DQIs is presented below.

Table I-4 Laboratory Data Quality Indicators

DQI	Item	Conformance
Completeness A measure of the amount of useable data (expressed as %) from a data collection activity	All critical samples analysed according to SAQP and proposal	**Yes**
	All analytes analysed according to SAQP in proposal	**Yes**
	Appropriate methods and PQLs	**Yes**
	Sample documentation complete	**Yes**
	Sample holding times complied with	**Partially***
Comparability The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Sample analytical methods used (including clean-up)	**Yes**
	Sample PQLs (justify/ quantify if different)	**Yes**
	Same laboratories (justify/ quantify if different)	**Yes**
	Same units (justify/ quantify if different)	**Yes**
Representativeness Confidence that data are representative of each media	All key samples analysed according to SAQP in the proposal	**Yes**
Precision A quantitative measure of the variability (or reproducibility) of data	Analysis of laboratory duplicates	**Yes**
	Analysis of field duplicates	**Yes**
	Analysis of laboratory-prepared volatile trip spikes	**Yes**
Accuracy A quantitative measure of the closeness of reported data to the true value	Analysis of field blanks	**Yes**
	Analysis of rinsate blanks	**Yes**
	Analysis of method blanks	**Yes**
	Analysis of matrix spikes (MS)	**Yes**
	Analysis of surrogate spikes	**Yes**
	Analysis of reference materials	Not applicable
	Analysis of laboratory control samples	**Yes**

*Phenols in two soil samples (12 soil samples in total) were not extracted within the holding time (two day exceedance), but unlikely to have a major implication in the total data set as the remainder of the tests (inclusive of Phenols) were extracted within the expected holding time.

I2.5 Conclusions for the Laboratory QA/QC

All contracted laboratories (SGS and Envirolab) were accredited by NATA for the analyses undertaken. All analytical procedures used were industry recognised and endorsed standard methods. Appropriate QC measures were integrated into each testing batch and the DQI were met, or if not, the variability was suitably justified. All final reports were submitted in full and included all requested analyses, as per the signed COC forms. EI considered the laboratory QA/QC programs carried out during the DSI to be appropriate.

I2.6 Summary of Project QA/QC

The project DQOs specified in **Section 6**, **Table 6-1** were considered to have been achieved. The adopted QA/QC program ensured that the data collated during the DSI were accurate, precise and representative of the (final) site conditions. It was therefore considered that the data were reliable and that the results could be used for DSI interpretative purposes.

Table I-5 Summary of QA/QC results for Investigation samples

Sample identification	Sampled Date	Description	TRH				BTEX				Heavy Metals							
			F1*	F2**	F3 (>C_{16} - C_{34})	F4 (>C_{34} - C_{40})	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate																		
BH3_0.2-0.3	28/5/2022	Fill	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	1	<0.3	18	<0.5	6	<0.05	0.7	3.7
QD1		Duplicate of BH3_0.2-0.3	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	1	<0.3	16	1.2	10	<0.05	1.3	5.7
RPD (%)			***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***11.8***	**96.6**	***50.0***	***0.0***	**60.0**	***42.6***
GW-BH1	4/6/2022	Groundwater	170	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	1	<1	<0.1	4	13
GWQD1		Duplicate of GW-BH1	170	130	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	4	12
RPD (%)			***0.0***	**87.5**	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***0.0***	***8.0***
Inter-laboratory Duplicate																		
GW-BH2	4/6/2022	Groundwater	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	3	<1	<0.1	2	<5
GWQT1		Duplicate of GW-BH2	<10	<50	<100	<100	<1	<1	<1	<3	<1	<0.1	<1	1	<1	<0.05	2	1
RPD (%)			***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***NA***	***0.0***	***0.0***	***0.0***	**100.0**	***0.0***	***NA***	***0.0***	**228.6**
TB1	21/05/2022	Trip blank	-	-	-	-	<0.1	<0.1	<0.1	<0.3	-	-	-	-	-	-	-	-
TS1		Trip spike	-	-	-	-	[88%]	[91%]	[92%]	[93%]	-	-	-	-	-	-	-	-
QR1		Rinsate	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	<5
GWTB1	4/06/2022	Trip blank	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-
GWTS1		Trip spike	-	-	-	-	[102%]	[102%]	[100%]	[100%]	-	-	-	-	-	-	-	-
QR1		Rinsate	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	<5

Indicates values where a single result is found to be less than detection, with the duplicate sample found to be over the detection limit.

RPD exceeds 30-50% range referenced from AS4482.1 (2005)

NOTE:

All soil results are reported in mg/kg . All water results are reported in µg/L.

* - to obtain F1 subtract the sum of BTEX concentrations from the C_6-C_{10} fraction

** - to obtain F2 subtract naphthalene from the > C_{10}-C_{16} fraction

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Appendix J – Laboratory QA/QC and DQOs

STATEMENT OF QA/QC PERFORMANCE

SE232596 R0

CLIENT DETAILS

Contact	Sergio Raposeira
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	sergio.raposeira@eiaustralia.com.au
Project	**E25568 Brookvale**
Order Number	**E25568**
Samples	16

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE232596 R0**
Date Received	31 May 2022
Date Reported	07 Jun 2022

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Extraction Date	Total Phenolics in Soil	2 items
	TRH (Total Recoverable Hydrocarbons) in Water	1 item
Analysis Date	Total Phenolics in Soil	2 items
	VOC's in Soil	15 items
	Volatile Petroleum Hydrocarbons in Soil	8 items
Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	2 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	15 Soil, 1 Water
Date documentation received	31/5/2022	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	8.8C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE232596 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250236	21 May 2022	31 May 2022	21 May 2023	07 Jun 2022	21 May 2023	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250236	21 May 2022	31 May 2022	21 May 2023	07 Jun 2022	21 May 2023	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250236	28 May 2022	31 May 2022	28 May 2023	07 Jun 2022	28 May 2023	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250236	28 May 2022	31 May 2022	28 May 2023	07 Jun 2022	28 May 2023	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250236	28 May 2022	31 May 2022	28 May 2023	07 Jun 2022	28 May 2023	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250236	28 May 2022	31 May 2022	28 May 2023	07 Jun 2022	28 May 2023	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250236	28 May 2022	31 May 2022	28 May 2023	07 Jun 2022	28 May 2023	07 Jun 2022

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE232596.007	LB249895	21 May 2022	31 May 2022	18 Jun 2022	01 Jun 2022	18 Jun 2022	01 Jun 2022

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250282	21 May 2022	31 May 2022	18 Jun 2022	06 Jun 2022	18 Jun 2022	07 Jun 2022
BH1_1.0-1.1	SE232596.002	LB250282	21 May 2022	31 May 2022	18 Jun 2022	06 Jun 2022	18 Jun 2022	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250282	21 May 2022	31 May 2022	18 Jun 2022	06 Jun 2022	18 Jun 2022	07 Jun 2022
BH2_3.5-3.6	SE232596.004	LB250282	21 May 2022	31 May 2022	18 Jun 2022	06 Jun 2022	18 Jun 2022	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250282	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250282	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250282	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250282	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250282	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250282	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250282	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250282	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
QD1	SE232596.016	LB250282	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250182	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH1_1.0-1.1	SE232596.002	LB250182	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250182	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH2_3.5-3.6	SE232596.004	LB250182	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
TB1	SE232596.005	LB250182	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250182	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250182	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250182	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250182	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250182	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250182	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250182	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250182	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022
QD1	SE232596.016	LB250182	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	08 Jun 2022	07 Jun 2022

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH1_1.0-1.1	SE232596.002	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_3.5-3.6	SE232596.004	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
QD1	SE232596.016	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022

HOLDING TIME SUMMARY

SE232596 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH1_1.0-1.1	SE232596.002	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_3.5-3.6	SE232596.004	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
QD1	SE232596.016	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH1_1.0-1.1	SE232596.002	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_3.5-3.6	SE232596.004	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
QD1	SE232596.016	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH1_1.0-1.1	SE232596.002	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_3.5-3.6	SE232596.004	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
QD1	SE232596.016	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250228	21 May 2022	31 May 2022	18 Jun 2022	06 Jun 2022	18 Jun 2022	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250228	21 May 2022	31 May 2022	18 Jun 2022	06 Jun 2022	18 Jun 2022	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250228	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250228	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250228	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250228	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250228	28 May 2022	31 May 2022	25 Jun 2022	06 Jun 2022	25 Jun 2022	07 Jun 2022

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN295

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250311	21 May 2022	31 May 2022	04 Jun 2022	07 Jun 2022†	04 Jun 2022	07 Jun 2022†
BH2_1.5-1.6	SE232596.003	LB250311	21 May 2022	31 May 2022	04 Jun 2022	07 Jun 2022†	04 Jun 2022	07 Jun 2022†
BH3_0.2-0.3	SE232596.008	LB250311	28 May 2022	31 May 2022	11 Jun 2022	07 Jun 2022	11 Jun 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250311	28 May 2022	31 May 2022	11 Jun 2022	07 Jun 2022	11 Jun 2022	07 Jun 2022

HOLDING TIME SUMMARY

SE232596 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Total Phenolics in Soil (continued)

Method: ME-(AU)-[ENV]AN295

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH5_0.2-0.3	SE232596.012	LB250311	28 May 2022	31 May 2022	11 Jun 2022	07 Jun 2022	11 Jun 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250311	28 May 2022	31 May 2022	11 Jun 2022	07 Jun 2022	11 Jun 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250311	28 May 2022	31 May 2022	11 Jun 2022	07 Jun 2022	11 Jun 2022	07 Jun 2022

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250221	21 May 2022	31 May 2022	17 Nov 2022	06 Jun 2022	17 Nov 2022	07 Jun 2022
BH1_1.0-1.1	SE232596.002	LB250221	21 May 2022	31 May 2022	17 Nov 2022	06 Jun 2022	17 Nov 2022	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250221	21 May 2022	31 May 2022	17 Nov 2022	06 Jun 2022	17 Nov 2022	07 Jun 2022
BH2_3.5-3.6	SE232596.004	LB250221	21 May 2022	31 May 2022	17 Nov 2022	06 Jun 2022	17 Nov 2022	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250221	28 May 2022	31 May 2022	24 Nov 2022	06 Jun 2022	24 Nov 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250221	28 May 2022	31 May 2022	24 Nov 2022	06 Jun 2022	24 Nov 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250221	28 May 2022	31 May 2022	24 Nov 2022	06 Jun 2022	24 Nov 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250221	28 May 2022	31 May 2022	24 Nov 2022	06 Jun 2022	24 Nov 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250221	28 May 2022	31 May 2022	24 Nov 2022	06 Jun 2022	24 Nov 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250221	28 May 2022	31 May 2022	24 Nov 2022	06 Jun 2022	24 Nov 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250221	28 May 2022	31 May 2022	24 Nov 2022	06 Jun 2022	24 Nov 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250221	28 May 2022	31 May 2022	24 Nov 2022	06 Jun 2022	24 Nov 2022	07 Jun 2022
QD1	SE232596.016	LB250221	28 May 2022	31 May 2022	24 Nov 2022	06 Jun 2022	24 Nov 2022	07 Jun 2022

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE232596.007	LB249830	21 May 2022	31 May 2022	17 Nov 2022	31 May 2022	17 Nov 2022	01 Jun 2022

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH1_1.0-1.1	SE232596.002	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_1.5-1.6	SE232596.003	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH2_3.5-3.6	SE232596.004	LB250173	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_0.2-0.3	SE232596.008	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022
QD1	SE232596.016	LB250173	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	13 Jul 2022	07 Jun 2022

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE232596.007	LB249984	21 May 2022	31 May 2022	28 May 2022	02 Jun 2022†	12 Jul 2022	07 Jun 2022

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
BH1_1.0-1.1	SE232596.002	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
BH2_1.5-1.6	SE232596.003	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
BH2_3.5-3.6	SE232596.004	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
TB1	SE232596.005	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
TS1	SE232596.006	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
BH3_0.2-0.3	SE232596.008	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022

HOLDING TIME SUMMARY

SE232596 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QD1	SE232596.016	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE232596.007	LB249903	21 May 2022	31 May 2022	04 Jun 2022	01 Jun 2022	04 Jun 2022	02 Jun 2022

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH1_0.3-0.4	SE232596.001	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
BH1_1.0-1.1	SE232596.002	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
BH2_1.5-1.6	SE232596.003	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
BH2_3.5-3.6	SE232596.004	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
TB1	SE232596.005	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
TS1	SE232596.006	LB250177	21 May 2022	31 May 2022	04 Jun 2022	03 Jun 2022	04 Jun 2022	07 Jun 2022†
BH3_0.2-0.3	SE232596.008	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH3_3.0-3.1	SE232596.009	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH4_0.4-0.5	SE232596.010	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH4_1.2-1.3	SE232596.011	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH5_0.2-0.3	SE232596.012	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH5_2.3-2.4	SE232596.013	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH6_0.2-0.3	SE232596.014	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
BH7_0.1-0.2	SE232596.015	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022
QD1	SE232596.016	LB250177	28 May 2022	31 May 2022	11 Jun 2022	03 Jun 2022	11 Jun 2022	07 Jun 2022

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE232596.007	LB249903	21 May 2022	31 May 2022	04 Jun 2022	01 Jun 2022	04 Jun 2022	02 Jun 2022

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	99
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	103
	BH3_0.2-0.3	SE232596.008	%	60 - 130%	104
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	105
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	111
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	106
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	113

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	87
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	86
	BH3_0.2-0.3	SE232596.008	%	60 - 130%	86
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	85
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	89
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	73
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	89
d14-p-terphenyl (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	89
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	91
	BH3_0.2-0.3	SE232596.008	%	60 - 130%	90
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	89
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	88
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	80
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH1_0.3-0.4	SE232596.001	%	70 - 130%	87
	BH1_1.0-1.1	SE232596.002	%	70 - 130%	88
	BH2_1.5-1.6	SE232596.003	%	70 - 130%	86
	BH2_3.5-3.6	SE232596.004	%	70 - 130%	87
	BH3_0.2-0.3	SE232596.008	%	70 - 130%	86
	BH3_3.0-3.1	SE232596.009	%	70 - 130%	86
	BH4_0.4-0.5	SE232596.010	%	70 - 130%	85
	BH4_1.2-1.3	SE232596.011	%	70 - 130%	86
	BH5_0.2-0.3	SE232596.012	%	70 - 130%	89
	BH5_2.3-2.4	SE232596.013	%	70 - 130%	89
	BH6_0.2-0.3	SE232596.014	%	70 - 130%	73
	BH7_0.1-0.2	SE232596.015	%	70 - 130%	89
	QD1	SE232596.016	%	70 - 130%	85
d14-p-terphenyl (Surrogate)	BH1_0.3-0.4	SE232596.001	%	70 - 130%	89
	BH1_1.0-1.1	SE232596.002	%	70 - 130%	89
	BH2_1.5-1.6	SE232596.003	%	70 - 130%	91
	BH2_3.5-3.6	SE232596.004	%	70 - 130%	90
	BH3_0.2-0.3	SE232596.008	%	70 - 130%	90
	BH3_3.0-3.1	SE232596.009	%	70 - 130%	90
	BH4_0.4-0.5	SE232596.010	%	70 - 130%	89
	BH4_1.2-1.3	SE232596.011	%	70 - 130%	90
	BH5_0.2-0.3	SE232596.012	%	70 - 130%	88
	BH5_2.3-2.4	SE232596.013	%	70 - 130%	90
	BH6_0.2-0.3	SE232596.014	%	70 - 130%	80
	BH7_0.1-0.2	SE232596.015	%	70 - 130%	90
	QD1	SE232596.016	%	70 - 130%	87
d5-nitrobenzene (Surrogate)	BH1_0.3-0.4	SE232596.001	%	70 - 130%	86
	BH1_1.0-1.1	SE232596.002	%	70 - 130%	86
	BH2_1.5-1.6	SE232596.003	%	70 - 130%	86
	BH2_3.5-3.6	SE232596.004	%	70 - 130%	85
	BH3_0.2-0.3	SE232596.008	%	70 - 130%	86
	BH3_3.0-3.1	SE232596.009	%	70 - 130%	85
	BH4_0.4-0.5	SE232596.010	%	70 - 130%	84
	BH4_1.2-1.3	SE232596.011	%	70 - 130%	85
	BH5_0.2-0.3	SE232596.012	%	70 - 130%	86

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-nitrobenzene (Surrogate)	BH5_2.3-2.4	SE232596.013	%	70 - 130%	87
	BH6_0.2-0.3	SE232596.014	%	70 - 130%	71
	BH7_0.1-0.2	SE232596.015	%	70 - 130%	91
	QD1	SE232596.016	%	70 - 130%	86

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	99
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	103
	BH3_0.2-0.3	SE232596.008	%	60 - 130%	104
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	105
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	111
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	106
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	113

Per- and Polyfluoroalkyl Substances (PFAS) in Solid Samples

Method: MA-1523

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
(13C2_PFTeDA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 130%	62
	BH2_1.5-1.6	SE232596.003	%	0 - 130%	47
	BH3_0.2-0.3	SE232596.008	%	0 - 130%	43
	BH4_0.4-0.5	SE232596.010	%	0 - 130%	48
	BH5_0.2-0.3	SE232596.012	%	0 - 130%	78
	BH6_0.2-0.3	SE232596.014	%	0 - 130%	64
	BH7_0.1-0.2	SE232596.015	%	0 - 130%	76
(13C2-4:2 FTS) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	103
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	86
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	91
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	79
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	90
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	105
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	114
(13C2-6:2 FTS) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	94
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	83
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	102
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	84
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	91
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	126
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	117
(13C2-8:2 FTS) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	91
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	63
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	61
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	79
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	85
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	117
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	128
(13C2-PFDoA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	75
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	70
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	87
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	75
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	113
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	86
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	88
(13C2-PFHxDA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	46
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	32
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	28
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	45
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	86
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	70
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	95
(13C3-PFBS) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	76
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	76
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	86

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Per- and Polyfluoroalkyl Substances (PFAS) in Solid Samples (continued) **Method: MA-1523**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
(13C3-PFBS) Isotopically Labelled Internal Recovery Standard	BH4_0.4-0.5	SE232596.010	%	0 - 150%	71
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	83
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	87
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	80
(13C3-PFHxS) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	91
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	98
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	95
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	97
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	103
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	100
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	101
(13C4_PFOA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	95
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	88
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	97
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	96
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	112
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	101
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	117
(13C4-PFBA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	102
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	102
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	102
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	99
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	103
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	101
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	101
(13C4-PFHpA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	90
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	94
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	93
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	96
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	117
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	101
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	103
(13C5-PFHxA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	92
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	81
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	95
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	86
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	104
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	96
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	100
(13C5-PFPeA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	109
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	108
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	111
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	112
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	111
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	105
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	112
(13C6-PFDA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	119
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	79
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	105
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	87
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	91
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	92
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	95
(13C7-PFUdA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	89
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	77
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	105
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	77
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	120
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	87
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	103
(13C8-PFOS) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	101

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Per- and Polyfluoroalkyl Substances (PFAS) in Solid Samples (continued) **Method: MA-1523**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
(13C8-PFOS) Isotopically Labelled Internal Recovery Standard	BH2_1.5-1.6	SE232596.003	%	0 - 150%	89
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	104
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	95
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	95
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	108
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	90
(13C8-PFOSA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	71
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	60
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	85
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	67
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	77
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	93
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	77
(13C9-PFNA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	96
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	116
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	140
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	118
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	91
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	135
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	100
(D3-N-MeFOSA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	52
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	43
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	50
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	37
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	59
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	58
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	62
(D3-N-MeFOSAA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	70
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	69
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	67
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	56
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	55
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	66
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	79
(D5-N-EtFOSA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	59
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	54
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	43
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	53
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	51
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	61
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	64
(D5-N-EtFOSAA) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	69
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	81
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	58
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	67
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	77
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	62
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	89
(D7-N-MeFOSE) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	51
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	55
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	49
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	45
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	49
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	58
	BH7_0.1-0.2	SE232596.015	%	0 - 150%	53
(D9-N-EtFOSE) Isotopically Labelled Internal Recovery Standard	BH1_0.3-0.4	SE232596.001	%	0 - 150%	46
	BH2_1.5-1.6	SE232596.003	%	0 - 150%	50
	BH3_0.2-0.3	SE232596.008	%	0 - 150%	40
	BH4_0.4-0.5	SE232596.010	%	0 - 150%	43
	BH5_0.2-0.3	SE232596.012	%	0 - 150%	49
	BH6_0.2-0.3	SE232596.014	%	0 - 150%	54

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Per- and Polyfluoroalkyl Substances (PFAS) in Solid Samples (continued)

Method: MA-1523

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
(D9-N-EtFOSE) Isotopically Labelled Internal Recovery Standard	BH7_0.1-0.2	SE232596.015	%	0 - 150%	47

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	86
	BH1_1.0-1.1	SE232596.002	%	60 - 130%	93
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	90
	BH2_3.5-3.6	SE232596.004	%	60 - 130%	91
	TB1	SE232596.005	%	60 - 130%	93
	TS1	SE232596.006	%	60 - 130%	86
	BH3_0.2-0.3	SE232596.008	%	60 - 130%	90
	BH3_3.0-3.1	SE232596.009	%	60 - 130%	89
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	90
	BH4_1.2-1.3	SE232596.011	%	60 - 130%	91
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	89
	BH5_2.3-2.4	SE232596.013	%	60 - 130%	92
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	91
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	89
	QD1	SE232596.016	%	60 - 130%	94
d4-1,2-dichloroethane (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	81
	BH1_1.0-1.1	SE232596.002	%	60 - 130%	87
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	85
	BH2_3.5-3.6	SE232596.004	%	60 - 130%	85
	TB1	SE232596.005	%	60 - 130%	90
	TS1	SE232596.006	%	60 - 130%	92
	BH3_0.2-0.3	SE232596.008	%	60 - 130%	84
	BH3_3.0-3.1	SE232596.009	%	60 - 130%	83
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	86
	BH4_1.2-1.3	SE232596.011	%	60 - 130%	88
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	84
	BH5_2.3-2.4	SE232596.013	%	60 - 130%	87
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	86
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	84
	QD1	SE232596.016	%	60 - 130%	87
d8-toluene (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	79
	BH1_1.0-1.1	SE232596.002	%	60 - 130%	86
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	83
	BH2_3.5-3.6	SE232596.004	%	60 - 130%	86
	TB1	SE232596.005	%	60 - 130%	87
	TS1	SE232596.006	%	60 - 130%	91
	BH3_0.2-0.3	SE232596.008	%	60 - 130%	81
	BH3_3.0-3.1	SE232596.009	%	60 - 130%	82
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	85
	BH4_1.2-1.3	SE232596.011	%	60 - 130%	85
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	81
	BH5_2.3-2.4	SE232596.013	%	60 - 130%	84
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	85
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	83
	QD1	SE232596.016	%	60 - 130%	86

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE232596.007	%	40 - 130%	106
d4-1,2-dichloroethane (Surrogate)	QR1	SE232596.007	%	40 - 130%	92
d8-toluene (Surrogate)	QR1	SE232596.007	%	40 - 130%	94

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	86
	BH1_1.0-1.1	SE232596.002	%	60 - 130%	93
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	90
	BH2_3.5-3.6	SE232596.004	%	60 - 130%	91

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH3_0.2-0.3	SE232596.008	%	60 - 130%	90
	BH3_3.0-3.1	SE232596.009	%	60 - 130%	89
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	90
	BH4_1.2-1.3	SE232596.011	%	60 - 130%	91
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	89
	BH5_2.3-2.4	SE232596.013	%	60 - 130%	92
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	91
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	89
	QD1	SE232596.016	%	60 - 130%	94
d4-1,2-dichloroethane (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	81
	BH1_1.0-1.1	SE232596.002	%	60 - 130%	87
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	85
	BH2_3.5-3.6	SE232596.004	%	60 - 130%	85
	BH3_0.2-0.3	SE232596.008	%	60 - 130%	84
	BH3_3.0-3.1	SE232596.009	%	60 - 130%	83
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	86
	BH4_1.2-1.3	SE232596.011	%	60 - 130%	88
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	84
	BH5_2.3-2.4	SE232596.013	%	60 - 130%	87
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	86
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	84
	QD1	SE232596.016	%	60 - 130%	87
d8-toluene (Surrogate)	BH1_0.3-0.4	SE232596.001	%	60 - 130%	79
	BH1_1.0-1.1	SE232596.002	%	60 - 130%	86
	BH2_1.5-1.6	SE232596.003	%	60 - 130%	83
	BH2_3.5-3.6	SE232596.004	%	60 - 130%	86
	BH3_0.2-0.3	SE232596.008	%	60 - 130%	81
	BH3_3.0-3.1	SE232596.009	%	60 - 130%	82
	BH4_0.4-0.5	SE232596.010	%	60 - 130%	85
	BH4_1.2-1.3	SE232596.011	%	60 - 130%	85
	BH5_0.2-0.3	SE232596.012	%	60 - 130%	81
	BH5_2.3-2.4	SE232596.013	%	60 - 130%	84
	BH6_0.2-0.3	SE232596.014	%	60 - 130%	85
	BH7_0.1-0.2	SE232596.015	%	60 - 130%	83
	QD1	SE232596.016	%	60 - 130%	86

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE232596.007	%	40 - 130%	106
d4-1,2-dichloroethane (Surrogate)	QR1	SE232596.007	%	60 - 130%	92
d8-toluene (Surrogate)	QR1	SE232596.007	%	40 - 130%	94

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB249895.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB250282.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB250173.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	97

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB250173.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	94
		d14-p-terphenyl (Surrogate)	%	-	97

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB250173.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB250173.001		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	98
		2-fluorobiphenyl (Surrogate)	%	-	94
		d14-p-terphenyl (Surrogate)	%	-	97

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB250173.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	97

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Sample Number	Parameter	Units	LOR	Result
LB250228.001	Total Organic Carbon	%w/w	0.05	<0.05

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN295

Sample Number	Parameter	Units	LOR	Result
LB250311.001	Total Phenols	mg/kg	0.5	<0.5

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB250221.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Tin, Sn	mg/kg	3	<3
	Zinc, Zn	mg/kg	2	<2.0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB249830.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB250173.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB249984.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB250177.001	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1
		1,2-dichloropropane	mg/kg	0.1	<0.1
		cis-1,3-dichloropropene	mg/kg	0.1	<0.1
		trans-1,3-dichloropropene	mg/kg	0.1	<0.1
		1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1
		Chloromethane	mg/kg	1	<1
		Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1
		Bromomethane	mg/kg	1	<1
		Chloroethane	mg/kg	1	<1
		Trichlorofluoromethane	mg/kg	1	<1
		Iodomethane	mg/kg	5	<5
		1,1-dichloroethene	mg/kg	0.1	<0.1
		Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5
		Allyl chloride	mg/kg	0.1	<0.1
		trans-1,2-dichloroethene	mg/kg	0.1	<0.1
		1,1-dichloroethane	mg/kg	0.1	<0.1
		cis-1,2-dichloroethene	mg/kg	0.1	<0.1
		Bromochloromethane	mg/kg	0.1	<0.1
		1,2-dichloroethane	mg/kg	0.1	<0.1
		1,1,1-trichloroethane	mg/kg	0.1	<0.1
		1,1-dichloropropene	mg/kg	0.1	<0.1
		Carbon tetrachloride	mg/kg	0.1	<0.1
		Dibromomethane	mg/kg	0.1	<0.1
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1
		1,1,2-trichloroethane	mg/kg	0.1	<0.1
		1,3-dichloropropane	mg/kg	0.1	<0.1
		Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1
		1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1
		cis-1,4-dichloro-2-butene	mg/kg	1	<1
		1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1
		1,2,3-trichloropropane	mg/kg	0.1	<0.1
		trans-1,4-dichloro-2-butene	mg/kg	1	<1
		1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1
		Hexachlorobutadiene	mg/kg	0.1	<0.1
	Halogenated Aromatics	Chlorobenzene	mg/kg	0.1	<0.1
		Bromobenzene	mg/kg	0.1	<0.1
		2-chlorotoluene	mg/kg	0.1	<0.1
		4-chlorotoluene	mg/kg	0.1	<0.1
		1,3-dichlorobenzene	mg/kg	0.1	<0.1
		1,4-dichlorobenzene	mg/kg	0.1	<0.1
		1,2-dichlorobenzene	mg/kg	0.1	<0.1
		1,2,4-trichlorobenzene	mg/kg	0.1	<0.1
		1,2,3-trichlorobenzene	mg/kg	0.1	<0.1
	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB250177.001	Monocyclic Aromatic Hydrocarbons	m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
		Styrene (Vinyl benzene)	mg/kg	0.1	<0.1
		Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1
		n-propylbenzene	mg/kg	0.1	<0.1
		1,3,5-trimethylbenzene	mg/kg	0.1	<0.1
		tert-butylbenzene	mg/kg	0.1	<0.1
		1,2,4-trimethylbenzene	mg/kg	0.1	<0.1
		sec-butylbenzene	mg/kg	0.1	<0.1
		p-isopropyltoluene	mg/kg	0.1	<0.1
		n-butylbenzene	mg/kg	0.1	<0.1
	Nitrogenous Compounds	Acrylonitrile	mg/kg	0.1	<0.1
		2-nitropropane	mg/kg	10	<10
	Oxygenated Compounds	Acetone (2-propanone)	mg/kg	10	<10
		MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1
		Vinyl acetate	mg/kg	10	<10
		MEK (2-butanone)	mg/kg	10	<10
		MIBK (4-methyl-2-pentanone)	mg/kg	1	<1
		2-hexanone (MBK)	mg/kg	5	<5
	Polycyclic VOCs	Naphthalene (VOC)	mg/kg	0.1	<0.1
	Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	88
		d8-toluene (Surrogate)	%	-	87
		Bromofluorobenzene (Surrogate)	%	-	93
	Totals	Total BTEX	mg/kg	0.6	<0.6
		Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8
		Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8
	Trihalomethanes	Chloroform	mg/kg	0.1	<0.1
		Bromodichloromethane	mg/kg	0.1	<0.1
		Chlorodibromomethane	mg/kg	0.1	<0.1
		Bromoform	mg/kg	0.1	<0.1

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB249903.001	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene (VOC)	µg/L	0.5	<0.5
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	92
		d8-toluene (Surrogate)	%	-	92
		Bromofluorobenzene (Surrogate)	%	-	103

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB250177.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	88

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB249903.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	92
		d8-toluene (Surrogate)	%	-	92
		Bromofluorobenzene (Surrogate)	%	-	103

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.007	LB249895.012	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	0

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.004	LB250282.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE232596.016	LB250282.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.012	LB250182.011	% Moisture	%w/w	1	8.7	8.4	42	3
SE232719.002	LB250182.022	% Moisture	%w/w	1	13.4	11.9	38	11

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.014	LB250173.028		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
			Total OC VIC EPA	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	30	0
SE232719.002	LB250173.024		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	172	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	172	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232719.002	LB250173.024		p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
			Total OC VIC EPA	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.17	30	0

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.014	LB250173.026		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	17
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	11
SE232719.002	LB250173.024		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	1
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.014	LB250173.026	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
		Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
		Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
		Fluoranthene	mg/kg	0.1	0.2	0.1	99	52
		Pyrene	mg/kg	0.1	0.2	0.1	105	50
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	162	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.014	LB250173.026		Chrysene	mg/kg	0.1	<0.1	<0.1	156	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.1	<0.1	116	35
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	0.1	<0.1	147	3
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	180	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	175	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	133	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	141	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	20
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	17
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	11
SE232719.002	LB250173.024		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	2
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	1
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.014	LB250173.029		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	0
SE232719.002	LB250173.024		Arochlor 1016	mg/kg	0.2	0	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	0	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	0	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	0	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	0	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	0	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	0	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	0	<0.2	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232719.002	LB250173.024		Arochlor 1268	mg/kg	0.2	0	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	0	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.1669145744	0	30	0

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232529.027	LB250228.004	Total Organic Carbon	%w/w	0.05	0.45	0.54	40	17

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN295

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.015	LB250311.011	Total Phenols	mg/kg	0.5	<0.5	<0.5	127	0

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.004	LB250221.014	Arsenic, As	mg/kg	1	1	1	121	14
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	10	8.7	35	13
		Copper, Cu	mg/kg	0.5	<0.5	<0.5	200	0
		Nickel, Ni	mg/kg	0.5	0.9	0.9	85	3
		Lead, Pb	mg/kg	1	7	6	46	11
		Zinc, Zn	mg/kg	2	2.7	2.3	109	16
SE232596.016	LB250221.024	Arsenic, As	mg/kg	1	<1	1	127	11
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	16	16	33	1
		Copper, Cu	mg/kg	0.5	1.2	1.0	74	16
		Nickel, Ni	mg/kg	0.5	1.3	1.3	68	5
		Lead, Pb	mg/kg	1	10	10	40	1
		Zinc, Zn	mg/kg	2	5.7	5.6	65	3

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232589.001	LB249830.014	Arsenic, As	µg/L	1	2	2	68	2
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	178	0
		Copper, Cu	µg/L	1	5	5	37	3
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	7	7	30	1
		Zinc, Zn	µg/L	5	39	39	28	0
SE232596.007	LB249830.019	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.014	LB250173.026		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232719.002	LB250173.024		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.011	LB250177.015	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	200	0
		Halogenated	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	200	0
		Aliphatics	Chloromethane	mg/kg	1	<1	<1	200	0
			Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	200	0
			Bromomethane	mg/kg	1	<1	<1	200	0
			Chloroethane	mg/kg	1	<1	<1	200	0
			Trichlorofluoromethane	mg/kg	1	<1	<1	200	0
			Iodomethane	mg/kg	5	<5	<5	200	0
			1,1-dichloroethene	mg/kg	0.1	<0.1	<0.1	200	0
			Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	200	0
			Allyl chloride	mg/kg	0.1	<0.1	<0.1	200	0
			trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	200	0
			1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	200	0
			cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	200	0
			Bromochloromethane	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dichloroethane	mg/kg	0.1	<0.1	<0.1	200	0
			1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	200	0
			1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	200	0
			Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	200	0
			Dibromomethane	mg/kg	0.1	<0.1	<0.1	200	0
			Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1	<0.1	200	0
			1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	200	0
			1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	200	0
			Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	200	0
			1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	200	0
			cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	200	0
			1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	200	0
			1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	200	0
			1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	200	0
			Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	200	0
		Halogenated	Chlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatics	Bromobenzene	mg/kg	0.1	<0.1	<0.1	200	0
			2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	200	0
			4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	200	0
			1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	200	0
		Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.011	LB250177.015	Monocyclic	o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	200	0
			Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	200	0
			n-propylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	200	0
			n-butylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
		Nitrogenous	Acrylonitrile	mg/kg	0.1	<0.1	<0.1	200	0
		Compounds	2-nitropropane	mg/kg	10	<10	<10	200	0
		Oxygenated	Acetone (2-propanone)	mg/kg	10	<10	<10	200	0
		Compounds	MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	200	0
			Vinyl acetate	mg/kg	10	<10	<10	200	0
			MEK (2-butanone)	mg/kg	10	<10	<10	200	0
			MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	200	0
			2-hexanone (MBK)	mg/kg	5	<5	<5	200	0
		Polycyclic	Naphthalene (VOC)	mg/kg	0.1	<0.1	<0.1	200	0
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	<0.5	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.8	8.5	50	3
			d8-toluene (Surrogate)	mg/kg	-	8.5	8.3	50	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.1	9.0	50	1
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
			Total VOC*	mg/kg	24	<24	<24	200	0
			Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	<3	<3	200	0
			Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8	<1.8	200	0
			Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8	<1.8	200	0
		Trihalomethan	Chloroform	mg/kg	0.1	<0.1	<0.1	200	0
		es	Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	200	0
			Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	200	0
			Bromoform	mg/kg	0.1	<0.1	<0.1	200	0
SE232719.002	LB250177.030	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene (VOC)	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.3	7.8	50	6
			d8-toluene (Surrogate)	mg/kg	-	8.1	7.7	50	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.9	8.4	50	7
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232506.004	LB249903.024	Monocyclic	Benzene	µg/L	0.5	<0.5	<0.5	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	<0.5	200	0
			Ethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			m/p-xylene	µg/L	1	<1	<1	200	0
			o-xylene	µg/L	0.5	<0.5	<0.5	200	0
		Polycyclic	Naphthalene (VOC)	µg/L	0.5	<0.5	<0.5	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.4	9.6	30	2
			d8-toluene (Surrogate)	µg/L	-	9.3	9.7	30	4
			Bromofluorobenzene (Surrogate)	µg/L	-	10.5	10.8	30	2

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232596.011	LB250177.015		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.8	8.5	30	3
			d8-toluene (Surrogate)	mg/kg	-	8.5	8.3	30	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.1	9.0	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE232719.002	LB250177.030		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.3	7.8	30	6
			d8-toluene (Surrogate)	mg/kg	-	8.1	7.7	30	5
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.9	8.4	30	7
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232506.004	LB249903.024		TRH C6-C10	µg/L	50	<50	<50	200	0
			TRH C6-C9	µg/L	40	<40	<40	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.4	9.6	30	2
			d8-toluene (Surrogate)	µg/L	-	9.3	9.7	30	4
			Bromofluorobenzene (Surrogate)	µg/L	-	10.5	10.8	30	2
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	<0.5	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250282.002	Mercury	mg/kg	0.05	0.20	0.2	70 - 130	99

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250173.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	101
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	97
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	96
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	98
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	103
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	101
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	97

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250173.002		Dichlorvos	mg/kg	0.5	1.8	2	60 - 140	90
		Diazinon (Dimpylate)	mg/kg	0.5	1.8	2	60 - 140	92
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	2	60 - 140	90
		Ethion	mg/kg	0.2	1.4	2	60 - 140	72
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	91
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	84

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250173.002		Naphthalene	mg/kg	0.1	4.2	4	60 - 140	105
		Acenaphthylene	mg/kg	0.1	3.9	4	60 - 140	98
		Acenaphthene	mg/kg	0.1	3.8	4	60 - 140	96
		Phenanthrene	mg/kg	0.1	4.0	4	60 - 140	101
		Anthracene	mg/kg	0.1	3.8	4	60 - 140	95
		Fluoranthene	mg/kg	0.1	3.9	4	60 - 140	98
		Pyrene	mg/kg	0.1	3.7	4	60 - 140	93
		Benzo(a)pyrene	mg/kg	0.1	4.1	4	60 - 140	102
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	89
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	91
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	84

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250173.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	99

TOC in Soil

Method: ME-(AU)-[ENV]AN188

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250228.002	Total Organic Carbon	%w/w	0.05	0.30	0.325	80 - 120	94

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN295

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250311.002	Total Phenols	mg/kg	0.5	18	20	80 - 120	92

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250221.002	Arsenic, As	mg/kg	1	330	318.22	80 - 120	104
	Cadmium, Cd	mg/kg	0.3	4.7	4.81	70 - 130	99
	Chromium, Cr	mg/kg	0.5	38	38.31	80 - 120	98
	Copper, Cu	mg/kg	0.5	310	290	80 - 120	108
	Nickel, Ni	mg/kg	0.5	190	187	80 - 120	102
	Lead, Pb	mg/kg	1	93	89.9	80 - 120	103
	Tin, Sn	mg/kg	3	43	41.7	80 - 120	102

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250221.002	Zinc, Zn	mg/kg	2	270	273	80 - 120	101

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB249830.002	Arsenic, As	µg/L	1	20	20	80 - 120	100
	Cadmium, Cd	µg/L	0.1	22	20	80 - 120	110
	Chromium, Cr	µg/L	1	21	20	80 - 120	106
	Copper, Cu	µg/L	1	21	20	80 - 120	105
	Lead, Pb	µg/L	1	20	20	80 - 120	99
	Nickel, Ni	µg/L	1	22	20	80 - 120	109
	Zinc, Zn	µg/L	5	23	20	80 - 120	113

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250173.002		TRH C10-C14	mg/kg	20	49	40	60 - 140	123
		TRH C15-C28	mg/kg	45	49	40	60 - 140	123
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	98
	TRH F Bands	TRH >C10-C16	mg/kg	25	50	40	60 - 140	125
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	110
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	100

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB249984.002		TRH C10-C14	µg/L	50	1400	1200	60 - 140	119
		TRH C15-C28	µg/L	200	1400	1200	60 - 140	117
		TRH C29-C36	µg/L	200	980	1200	60 - 140	82
	TRH F Bands	TRH >C10-C16	µg/L	60	1400	1200	60 - 140	113
		TRH >C16-C34 (F3)	µg/L	500	1200	1200	60 - 140	102
		TRH >C34-C40 (F4)	µg/L	500	610	600	60 - 140	102

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250177.002	Halogenated	1,1-dichloroethene	mg/kg	0.1	5.1	5	60 - 140	102
	Aliphatics	1,2-dichloroethane	mg/kg	0.1	4.9	5	60 - 140	98
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	4.9	5	60 - 140	99
	Halogenated	Chlorobenzene	mg/kg	0.1	4.8	5	60 - 140	96
	Monocyclic	Benzene	mg/kg	0.1	4.5	5	60 - 140	89
	Aromatic	Toluene	mg/kg	0.1	4.4	5	60 - 140	88
		Ethylbenzene	mg/kg	0.1	4.3	5	60 - 140	87
		m/p-xylene	mg/kg	0.2	8.6	10	60 - 140	86
		o-xylene	mg/kg	0.1	4.6	5	60 - 140	91
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.4	10	70 - 130	94
		d8-toluene (Surrogate)	mg/kg	-	9.5	10	70 - 130	95
		Bromofluorobenzene (Surrogate)	mg/kg	-	8.5	10	70 - 130	85
	Trihalomethan	Chloroform	mg/kg	0.1	5.6	5	60 - 140	112

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB249903.002	Monocyclic	Benzene	µg/L	0.5	55	45.45	60 - 140	122
	Aromatic	Toluene	µg/L	0.5	55	45.45	60 - 140	122
		Ethylbenzene	µg/L	0.5	53	45.45	60 - 140	117
		m/p-xylene	µg/L	1	110	90.9	60 - 140	116
		o-xylene	µg/L	0.5	53	45.45	60 - 140	117
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.1	10	60 - 140	101
		d8-toluene (Surrogate)	µg/L	-	10.3	10	70 - 130	103
		Bromofluorobenzene (Surrogate)	µg/L	-	10.1	10	70 - 130	101

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250177.002		TRH C6-C10	mg/kg	25	65	92.5	60 - 140	70
		TRH C6-C9	mg/kg	20	59	80	60 - 140	73
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.4	10	70 - 130	94
		Bromofluorobenzene (Surrogate)	mg/kg	-	8.5	10	70 - 130	85
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	39	62.5	60 - 140	62

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Water — **Method: ME-(AU)-[ENV]AN433**

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB249903.002		TRH C6-C10	µg/L	50	820	946.63	60 - 140	87
		TRH C6-C9	µg/L	40	700	818.71	60 - 140	85
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.1	10	60 - 140	101
		d8-toluene (Surrogate)	µg/L	-	10.3	10	70 - 130	103
		Bromofluorobenzene (Surrogate)	µg/L	-	10.1	10	70 - 130	101
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	500	639.67	60 - 140	78

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250173.004		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	109
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	105
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	103
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	0.2	<0.2	0.2	104
			Endrin	mg/kg	0.2	0.2	<0.2	0.2	112
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	110
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
			Total OC VIC EPA	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	-	103

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250173.004		Dichlorvos	mg/kg	0.5	1.8	<0.5	2	89
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	1.8	<0.5	2	90
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	<0.2	2	88
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	1.5	<0.2	2	73
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	6.8	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	89
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	84

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250173.004	Naphthalene	mg/kg	0.1	4.2	<0.1	4	105
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	3.9	<0.1	4	97
		Acenaphthene	mg/kg	0.1	3.9	<0.1	4	96
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	4.0	<0.1	4	100
		Anthracene	mg/kg	0.1	3.7	<0.1	4	94
		Fluoranthene	mg/kg	0.1	3.9	<0.1	4	97
		Pyrene	mg/kg	0.1	3.7	<0.1	4	94
		Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
		Chrysene	mg/kg	0.1	<0.1	<0.1	-	-

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250173.004		Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	4.0	<0.1	4	101
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	4.0	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	4.2	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	4.1	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	31	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	-	87
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	89
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	84

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250173.004		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.4	<0.2	0.4	95
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	103

TOC in Soil

Method: ME-(AU)-[ENV]AN188

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232777.001	LB250228.017	Total Organic Carbon	%w/w	0.05	0.67	0.34	-	-

Total Phenolics in Soil

Method: ME-(AU)-[ENV]AN295

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250311.004	Total Phenols	mg/kg	0.5	19	<0.5	20	96

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232698.001	LB250221.004	Arsenic, As	mg/kg	1	53	7	50	93
		Cadmium, Cd	mg/kg	0.3	46	<0.3	50	91
		Chromium, Cr	mg/kg	0.5	53	4.9	50	96
		Copper, Cu	mg/kg	0.5	62	20	50	84
		Nickel, Ni	mg/kg	0.5	48	1.9	50	93
		Lead, Pb	mg/kg	1	110	260	50	-296 ④
		Zinc, Zn	mg/kg	2	100	66	50	67 ④

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232529.023	LB249830.004	Arsenic, As	µg/L	1	20	-0.073	20	101
		Cadmium, Cd	µg/L	0.1	22	-0.054	20	110
		Chromium, Cr	µg/L	1	21	0.038	20	107
		Copper, Cu	µg/L	1	21	0.052	20	106
		Lead, Pb	µg/L	1	19	0.023	20	97
		Nickel, Ni	µg/L	1	22	-0.021	20	111
		Zinc, Zn	µg/L	5	26	0.186	20	128

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number	Parameter	Units	LOR

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250173.004		TRH C10-C14	mg/kg	20	47	<20	40	118
			TRH C15-C28	mg/kg	45	48	<45	40	120
			TRH C29-C36	mg/kg	45	<45	<45	40	95
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	48	<25	40	120
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	44	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	110
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250177.004	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	-	-
			1,2-dichloropropane	mg/kg	0.1	<0.1	<0.1	-	-
			cis-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	-	-
			trans-1,3-dichloropropene	mg/kg	0.1	<0.1	<0.1	-	-
			1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1	<0.1	-	-
		Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1	<1	-	-
			Chloromethane	mg/kg	1	<1	<1	-	-
			Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1	<0.1	-	-
			Bromomethane	mg/kg	1	<1	<1	-	-
			Chloroethane	mg/kg	1	<1	<1	-	-
			Trichlorofluoromethane	mg/kg	1	<1	<1	-	-
			Iodomethane	mg/kg	5	<5	<5	-	-
			1,1-dichloroethene	mg/kg	0.1	5.0	<0.1	5	100
			Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5	<0.5	-	-
			Allyl chloride	mg/kg	0.1	<0.1	<0.1	-	-
			trans-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	-	-
			1,1-dichloroethane	mg/kg	0.1	<0.1	<0.1	-	-
			cis-1,2-dichloroethene	mg/kg	0.1	<0.1	<0.1	-	-
			Bromochloromethane	mg/kg	0.1	<0.1	<0.1	-	-
			1,2-dichloroethane	mg/kg	0.1	4.8	<0.1	5	97
			1,1,1-trichloroethane	mg/kg	0.1	<0.1	<0.1	-	-
			1,1-dichloropropene	mg/kg	0.1	<0.1	<0.1	-	-
			Carbon tetrachloride	mg/kg	0.1	<0.1	<0.1	-	-
			Dibromomethane	mg/kg	0.1	<0.1	<0.1	-	-
			Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	4.9	<0.1	5	98
			1,1,2-trichloroethane	mg/kg	0.1	<0.1	<0.1	-	-
			1,3-dichloropropane	mg/kg	0.1	<0.1	<0.1	-	-
			Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1	<0.1	-	-
			1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	-	-
			cis-1,4-dichloro-2-butene	mg/kg	1	<1	<1	-	-
			1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1	<0.1	-	-
			1,2,3-trichloropropane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-1,4-dichloro-2-butene	mg/kg	1	<1	<1	-	-
			1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1	<0.1	-	-
			Hexachlorobutadiene	mg/kg	0.1	<0.1	<0.1	-	-
		Halogenated Aromatics	Chlorobenzene	mg/kg	0.1	4.7	<0.1	5	95
			Bromobenzene	mg/kg	0.1	<0.1	<0.1	-	-
			2-chlorotoluene	mg/kg	0.1	<0.1	<0.1	-	-
			4-chlorotoluene	mg/kg	0.1	<0.1	<0.1	-	-
			1,3-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	-	-
			1,4-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	-	-
			1,2-dichlorobenzene	mg/kg	0.1	<0.1	<0.1	-	-
			1,2,4-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	-	-
			1,2,3-trichlorobenzene	mg/kg	0.1	<0.1	<0.1	-	-
		Monocyclic Aromatic	Benzene	mg/kg	0.1	4.3	<0.1	5	86
			Toluene	mg/kg	0.1	4.3	<0.1	5	85
			Ethylbenzene	mg/kg	0.1	4.3	<0.1	5	86
			m/p-xylene	mg/kg	0.2	8.4	<0.2	10	84

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250177.004	Monocyclic Aromatic	o-xylene	mg/kg	0.1	4.5	<0.1	5	90
			Styrene (Vinyl benzene)	mg/kg	0.1	<0.1	<0.1	-	-
			Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1	<0.1	-	-
			n-propylbenzene	mg/kg	0.1	<0.1	<0.1	-	-
			1,3,5-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	-	-
			tert-butylbenzene	mg/kg	0.1	<0.1	<0.1	-	-
			1,2,4-trimethylbenzene	mg/kg	0.1	<0.1	<0.1	-	-
			sec-butylbenzene	mg/kg	0.1	<0.1	<0.1	-	-
			p-isopropyltoluene	mg/kg	0.1	<0.1	<0.1	-	-
			n-butylbenzene	mg/kg	0.1	<0.1	<0.1	-	-
		Nitrogenous Compounds	Acrylonitrile	mg/kg	0.1	<0.1	<0.1	-	-
			2-nitropropane	mg/kg	10	<10	<10	-	-
		Oxygenated Compounds	Acetone (2-propanone)	mg/kg	10	<10	<10	-	-
			MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1	<0.1	-	-
			Vinyl acetate	mg/kg	10	<10	<10	-	-
			MEK (2-butanone)	mg/kg	10	<10	<10	-	-
			MIBK (4-methyl-2-pentanone)	mg/kg	1	<1	<1	-	-
			2-hexanone (MBK)	mg/kg	5	<5	<5	-	-
		Polycyclic	Naphthalene (VOC)	mg/kg	0.1	<0.1	<0.1	-	-
		Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5	<0.5	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.3	8.1	10	93
			d8-toluene (Surrogate)	mg/kg	-	9.3	7.9	10	93
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.5	8.6	10	85
		Totals	Total Xylenes	mg/kg	0.3	13	<0.3	-	-
			Total BTEX	mg/kg	0.6	26	<0.6	-	-
			Total VOC*	mg/kg	24	51	<24	-	-
			Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	<3.0	<3.0	-	-
			Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	25	<1.8	-	-
			Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	25	<1.8	-	-
		Trihalomethanes	Chloroform	mg/kg	0.1	5.6	<0.1	5	111
			Bromodichloromethane	mg/kg	0.1	<0.1	<0.1	-	-
			Chlorodibromomethane	mg/kg	0.1	<0.1	<0.1	-	-
			Bromoform	mg/kg	0.1	<0.1	<0.1	-	-

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232574.001	LB249903.023	Monocyclic Aromatic	Benzene	µg/L	0.5	52	<0.5	45.45	113
			Toluene	µg/L	0.5	50	<0.5	45.45	111
			Ethylbenzene	µg/L	0.5	49	<0.5	45.45	108
			m/p-xylene	µg/L	1	97	<1	90.9	107
			o-xylene	µg/L	0.5	49	<0.5	45.45	107
		Polycyclic	Naphthalene (VOC)	µg/L	0.5	54	<0.5	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.0	9.5	-	90
			d8-toluene (Surrogate)	µg/L	-	9.3	9.3	-	93
			Bromofluorobenzene (Surrogate)	µg/L	-	10.7	11	-	107

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232596.001	LB250177.004		TRH C6-C10	mg/kg	25	64	<25	92.5	69
			TRH C6-C9	mg/kg	20	56	<20	80	71
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.3	8.1	10	93
			d8-toluene (Surrogate)	mg/kg	-	9.3	7.9	10	93
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.5	8.6	-	85
		VPH F Bands	Benzene (F0)	mg/kg	0.1	4.3	<0.1	-	-
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	38	<25	62.5	61

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232574.001	LB249903.023		TRH C6-C10	µg/L	50	990	<50	946.63	105
			TRH C6-C9	µg/L	40	850	<40	818.71	104
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.0	9.5	-	90
			d8-toluene (Surrogate)	µg/L	-	9.3	9.3	-	93

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Water (continued)

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232574.001	LB249903.023	Surrogates	Bromofluorobenzene (Surrogate)	µg/L	-	10.7	11	-	107
		VPH F	Benzene (F0)	µg/L	0.5		<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	700	<50	639.67	109

MATRIX SPIKE DUPLICATES

SE232596 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

QC Sample	Sample Number	Parameter	Units	LOR

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

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STATEMENT OF QA/QC PERFORMANCE

SE232924 R0

CLIENT DETAILS

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Project	**E25568 Brookvale**
Order Number	**E25568**
Samples	7

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SGS Reference	**SE232924 R0**
Date Received	08 Jun 2022
Date Reported	16 Jun 2022

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Surrogate	Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples	2 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	7 Water
Date documentation received	8/6/2022	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	6°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE232924 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Alkalinity

Method: ME-(AU)-[ENV]AN135

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250802	04 Jun 2022	08 Jun 2022	18 Jun 2022	14 Jun 2022	18 Jun 2022	15 Jun 2022
GW_BH2	SE232924.002	LB250802	04 Jun 2022	08 Jun 2022	18 Jun 2022	14 Jun 2022	18 Jun 2022	15 Jun 2022
GW_BH3	SE232924.003	LB250802	04 Jun 2022	08 Jun 2022	18 Jun 2022	14 Jun 2022	18 Jun 2022	15 Jun 2022

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250502	04 Jun 2022	08 Jun 2022	02 Jul 2022	09 Jun 2022	02 Jul 2022	15 Jun 2022
GW_BH2	SE232924.002	LB250502	04 Jun 2022	08 Jun 2022	02 Jul 2022	09 Jun 2022	02 Jul 2022	15 Jun 2022
GW_BH3	SE232924.003	LB250502	04 Jun 2022	08 Jun 2022	02 Jul 2022	09 Jun 2022	02 Jul 2022	15 Jun 2022

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250500	04 Jun 2022	08 Jun 2022	02 Jul 2022	09 Jun 2022	02 Jul 2022	09 Jun 2022
GW_BH2	SE232924.002	LB250500	04 Jun 2022	08 Jun 2022	02 Jul 2022	09 Jun 2022	02 Jul 2022	09 Jun 2022
GW_BH3	SE232924.003	LB250500	04 Jun 2022	08 Jun 2022	02 Jul 2022	09 Jun 2022	02 Jul 2022	09 Jun 2022
GWQD1	SE232924.004	LB250500	04 Jun 2022	08 Jun 2022	02 Jul 2022	09 Jun 2022	02 Jul 2022	09 Jun 2022
QR1	SE232924.007	LB250500	04 Jun 2022	08 Jun 2022	02 Jul 2022	09 Jun 2022	02 Jul 2022	09 Jun 2022

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250603	04 Jun 2022	08 Jun 2022	01 Dec 2022	10 Jun 2022	01 Dec 2022	10 Jun 2022
GW_BH2	SE232924.002	LB250603	04 Jun 2022	08 Jun 2022	01 Dec 2022	10 Jun 2022	01 Dec 2022	10 Jun 2022
GW_BH3	SE232924.003	LB250603	04 Jun 2022	08 Jun 2022	01 Dec 2022	10 Jun 2022	01 Dec 2022	10 Jun 2022

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
GW_BH2	SE232924.002	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
GW_BH3	SE232924.003	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
GWQD1	SE232924.004	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
QR1	SE232924.007	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	16 Jun 2022
GW_BH2	SE232924.002	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	16 Jun 2022
GW_BH3	SE232924.003	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	16 Jun 2022
GWQD1	SE232924.004	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	16 Jun 2022
QR1	SE232924.007	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	16 Jun 2022

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
GW_BH2	SE232924.002	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
GW_BH3	SE232924.003	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
GWQD1	SE232924.004	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	16 Jun 2022
QR1	SE232924.007	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	16 Jun 2022

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250503	04 Jun 2022	08 Jun 2022	18 Jun 2022	09 Jun 2022	18 Jun 2022	09 Jun 2022
GW_BH2	SE232924.002	LB250503	04 Jun 2022	08 Jun 2022	18 Jun 2022	09 Jun 2022	18 Jun 2022	09 Jun 2022
GW_BH3	SE232924.003	LB250503	04 Jun 2022	08 Jun 2022	18 Jun 2022	09 Jun 2022	18 Jun 2022	09 Jun 2022

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250756	04 Jun 2022	08 Jun 2022	01 Dec 2022	14 Jun 2022	01 Dec 2022	15 Jun 2022
GW_BH2	SE232924.002	LB250756	04 Jun 2022	08 Jun 2022	01 Dec 2022	14 Jun 2022	01 Dec 2022	15 Jun 2022
GW_BH3	SE232924.003	LB250756	04 Jun 2022	08 Jun 2022	01 Dec 2022	14 Jun 2022	01 Dec 2022	15 Jun 2022
GWQD1	SE232924.004	LB250756	04 Jun 2022	08 Jun 2022	01 Dec 2022	14 Jun 2022	01 Dec 2022	15 Jun 2022
QR1	SE232924.007	LB250756	04 Jun 2022	08 Jun 2022	01 Dec 2022	14 Jun 2022	01 Dec 2022	15 Jun 2022

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref

HOLDING TIME SUMMARY

SE232924 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

TRH (Total Recoverable Hydrocarbons) in Water (continued)

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
GW_BH2	SE232924.002	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
GW_BH3	SE232924.003	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
GWQD1	SE232924.004	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022
QR1	SE232924.007	LB250499	04 Jun 2022	08 Jun 2022	11 Jun 2022	09 Jun 2022	19 Jul 2022	15 Jun 2022

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GW_BH2	SE232924.002	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GW_BH3	SE232924.003	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GWQD1	SE232924.004	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GWTB1	SE232924.005	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GWTS1	SE232924.006	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
QR1	SE232924.007	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
GW_BH1	SE232924.001	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GW_BH2	SE232924.002	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GW_BH3	SE232924.003	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GWQD1	SE232924.004	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GWTB1	SE232924.005	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
GWTS1	SE232924.006	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022
QR1	SE232924.007	LB250880	04 Jun 2022	08 Jun 2022	18 Jun 2022	15 Jun 2022	18 Jun 2022	16 Jun 2022

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	115
	GW_BH2	SE232924.002	%	40 - 130%	122
	GW_BH3	SE232924.003	%	40 - 130%	117

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	68
	GW_BH2	SE232924.002	%	40 - 130%	60
	GW_BH3	SE232924.003	%	40 - 130%	64
d14-p-terphenyl (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	80
	GW_BH2	SE232924.002	%	40 - 130%	76
	GW_BH3	SE232924.003	%	40 - 130%	78

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	68
	GW_BH2	SE232924.002	%	40 - 130%	60
	GW_BH3	SE232924.003	%	40 - 130%	64
d14-p-terphenyl (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	80
	GW_BH2	SE232924.002	%	40 - 130%	76
	GW_BH3	SE232924.003	%	40 - 130%	78
d5-nitrobenzene (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	65
	GW_BH2	SE232924.002	%	40 - 130%	57
	GW_BH3	SE232924.003	%	40 - 130%	57

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples

Method: MA-1523

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
(13C2_PFTeDA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	87
	GW_BH2	SE232924.002	%	10 - 150%	141
	GW_BH3	SE232924.003	%	10 - 150%	114
(13C2-4:2 FTS) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	102
	GW_BH2	SE232924.002	%	10 - 150%	96
	GW_BH3	SE232924.003	%	10 - 150%	70
(13C2-6:2 FTS) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	99
	GW_BH2	SE232924.002	%	10 - 150%	90
	GW_BH3	SE232924.003	%	10 - 150%	74
(13C2-8:2 FTS) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	57
	GW_BH2	SE232924.002	%	10 - 150%	89
	GW_BH3	SE232924.003	%	10 - 150%	84
(13C2-PFDoA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	86
	GW_BH2	SE232924.002	%	10 - 150%	117
	GW_BH3	SE232924.003	%	10 - 150%	87
(13C2-PFHxDA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	147
	GW_BH2	SE232924.002	%	10 - 150%	273 †
	GW_BH3	SE232924.003	%	10 - 150%	191 †
(13C3-PFBS) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	117
	GW_BH2	SE232924.002	%	10 - 150%	109
	GW_BH3	SE232924.003	%	10 - 150%	88
(13C3-PFHxS) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	98
	GW_BH2	SE232924.002	%	10 - 150%	96
	GW_BH3	SE232924.003	%	10 - 150%	92
(13C4_PFOA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	107
	GW_BH2	SE232924.002	%	10 - 150%	105
	GW_BH3	SE232924.003	%	10 - 150%	102
(13C4-PFBA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	101
	GW_BH2	SE232924.002	%	10 - 150%	99
	GW_BH3	SE232924.003	%	10 - 150%	99
(13C4-PFHpA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	104
	GW_BH2	SE232924.002	%	10 - 150%	97
	GW_BH3	SE232924.003	%	10 - 150%	102
(13C5-PFHxA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	117
	GW_BH2	SE232924.002	%	10 - 150%	112

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Per- and Polyfluoroalkyl Substances (PFAS) in Aqueous Samples (continued)

Method: MA-1523

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
(13C5-PFHxA) Isotopically Labelled Internal Recovery Standard	GW_BH3	SE232924.003	%	10 - 150%	100
(13C5-PFPeA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	101
	GW_BH2	SE232924.002	%	10 - 150%	100
	GW_BH3	SE232924.003	%	10 - 150%	102
(13C6-PFDA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	99
	GW_BH2	SE232924.002	%	10 - 150%	91
	GW_BH3	SE232924.003	%	10 - 150%	85
(13C7-PFUdA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	90
	GW_BH2	SE232924.002	%	10 - 150%	108
	GW_BH3	SE232924.003	%	10 - 150%	93
(13C8-PFOS) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	77
	GW_BH2	SE232924.002	%	10 - 150%	86
	GW_BH3	SE232924.003	%	10 - 150%	107
(13C8-PFOSA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	83
	GW_BH2	SE232924.002	%	10 - 150%	57
	GW_BH3	SE232924.003	%	10 - 150%	58
(13C9-PFNA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	91
	GW_BH2	SE232924.002	%	10 - 150%	85
	GW_BH3	SE232924.003	%	10 - 150%	93
(D3-N-MeFOSA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	63
	GW_BH2	SE232924.002	%	10 - 150%	65
	GW_BH3	SE232924.003	%	10 - 150%	60
(D3-N-MeFOSAA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	75
	GW_BH2	SE232924.002	%	10 - 150%	106
	GW_BH3	SE232924.003	%	10 - 150%	93
(D5-N-EtFOSA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	77
	GW_BH2	SE232924.002	%	10 - 150%	79
	GW_BH3	SE232924.003	%	10 - 150%	63
(D5-N-EtFOSAA) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	60
	GW_BH2	SE232924.002	%	10 - 150%	80
	GW_BH3	SE232924.003	%	10 - 150%	68
(D7-N-MeFOSE) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	83
	GW_BH2	SE232924.002	%	10 - 150%	80
	GW_BH3	SE232924.003	%	10 - 150%	64
(D9-N-EtFOSE) Isotopically Labelled Internal Recovery Standard	GW_BH1	SE232924.001	%	10 - 150%	71
	GW_BH2	SE232924.002	%	10 - 150%	78
	GW_BH3	SE232924.003	%	10 - 150%	58

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	102
	GW_BH2	SE232924.002	%	40 - 130%	101
	GW_BH3	SE232924.003	%	40 - 130%	101
	GWQD1	SE232924.004	%	40 - 130%	102
	GWTB1	SE232924.005	%	40 - 130%	97
	GWTS1	SE232924.006	%	40 - 130%	93
	QR1	SE232924.007	%	40 - 130%	100
d4-1,2-dichloroethane (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	87
	GW_BH2	SE232924.002	%	40 - 130%	87
	GW_BH3	SE232924.003	%	40 - 130%	86
	GWQD1	SE232924.004	%	40 - 130%	88
	GWTB1	SE232924.005	%	40 - 130%	85
	GWTS1	SE232924.006	%	40 - 130%	93
	QR1	SE232924.007	%	40 - 130%	89
d8-toluene (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	82
	GW_BH2	SE232924.002	%	40 - 130%	89
	GW_BH3	SE232924.003	%	40 - 130%	89
	GWQD1	SE232924.004	%	40 - 130%	83
	GWTB1	SE232924.005	%	40 - 130%	87
	GWTS1	SE232924.006	%	40 - 130%	94
	QR1	SE232924.007	%	40 - 130%	88

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Water — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	102
	GW_BH2	SE232924.002	%	40 - 130%	101
	GW_BH3	SE232924.003	%	40 - 130%	101
	GWQD1	SE232924.004	%	40 - 130%	102
	QR1	SE232924.007	%	40 - 130%	100
d4-1,2-dichloroethane (Surrogate)	GW_BH1	SE232924.001	%	60 - 130%	87
	GW_BH2	SE232924.002	%	60 - 130%	87
	GW_BH3	SE232924.003	%	60 - 130%	86
	GWQD1	SE232924.004	%	60 - 130%	88
	QR1	SE232924.007	%	60 - 130%	89
d8-toluene (Surrogate)	GW_BH1	SE232924.001	%	40 - 130%	82
	GW_BH2	SE232924.002	%	40 - 130%	89
	GW_BH3	SE232924.003	%	40 - 130%	89
	GWQD1	SE232924.004	%	40 - 130%	83
	QR1	SE232924.007	%	40 - 130%	88

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Alkalinity

Method: ME-(AU)-[ENV]AN135

Sample Number	Parameter	Units	LOR	Result
LB250802.001	Total Alkalinity as CaCO3	mg/L	5	<5

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result
LB250502.001	Chloride	mg/L	1	<1.0
	Sulfate, SO4	mg/L	1	<1.0

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB250500.001	Mercury	mg/L	0.0001	<0.0001

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result
LB250603.001	Calcium, Ca	mg/L	0.1	<0.1
	Magnesium, Mg	mg/L	0.1	<0.1
	Potassium, K	mg/L	0.2	<0.2
	Sodium, Na	mg/L	0.1	<0.1

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB250499.001		Hexachlorobenzene (HCB)	µg/L	0.1	<0.1
		Alpha BHC	µg/L	0.1	<0.1
		Lindane (gamma BHC)	µg/L	0.1	<0.1
		Heptachlor	µg/L	0.1	<0.1
		Aldrin	µg/L	0.1	<0.1
		Beta BHC	µg/L	0.1	<0.1
		Delta BHC	µg/L	0.1	<0.1
		Heptachlor epoxide	µg/L	0.1	<0.1
		Alpha Endosulfan	µg/L	0.1	<0.1
		Gamma Chlordane	µg/L	0.1	<0.1
		Alpha Chlordane	µg/L	0.1	<0.1
		p,p'-DDE	µg/L	0.1	<0.1
		Dieldrin	µg/L	0.1	<0.1
		Endrin	µg/L	0.1	<0.1
		Beta Endosulfan	µg/L	0.1	<0.1
		p,p'-DDD	µg/L	0.1	<0.1
		p,p'-DDT	µg/L	0.1	<0.1
		Endosulfan sulphate	µg/L	0.1	<0.1
		Endrin aldehyde	µg/L	0.1	<0.1
		Methoxychlor	µg/L	0.1	<0.1
		Endrin ketone	µg/L	0.1	<0.1
		Isodrin	µg/L	0.1	<0.1
		Mirex	µg/L	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	59

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB250499.001	Dichlorvos	µg/L	0.5	<0.5
	Dimethoate	µg/L	0.5	<0.5
	Diazinon (Dimpylate)	µg/L	0.5	<0.5
	Fenitrothion	µg/L	0.2	<0.2
	Malathion	µg/L	0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	<0.2
	Parathion-ethyl (Parathion)	µg/L	0.2	<0.2
	Bromophos Ethyl	µg/L	0.2	<0.2
	Methidathion	µg/L	0.5	<0.5
	Ethion	µg/L	0.2	<0.2
	Azinphos-methyl	µg/L	0.2	<0.2

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

OP Pesticides in Water (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB250499.001	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	68
		d14-p-terphenyl (Surrogate)	%	-	88

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB250499.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	54
		2-fluorobiphenyl (Surrogate)	%	-	68
		d14-p-terphenyl (Surrogate)	%	-	88

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Sample Number	Parameter	Units	LOR	Result
LB250503.001	Total Phenols	mg/L	0.05	<0.05

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB250756.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB250499.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB250880.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		Iodomethane	µg/L	5	<5
		1,1-dichloroethene	µg/L	0.5	<0.5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB250880.001	Halogenated Aliphatics	Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5
		Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	2	<1
		Vinyl acetate	µg/L	10	<10
		MEK (2-butanone)	µg/L	10	<10
		MIBK (4-methyl-2-pentanone)	µg/L	5	<5
		2-hexanone (MBK)	µg/L	5	<5
	Polycyclic VOCs	Naphthalene (VOC)	µg/L	0.5	<0.5
	Sulphonated	Carbon disulfide	µg/L	2	<2
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	90
		d8-toluene (Surrogate)	%	-	90
		Bromofluorobenzene (Surrogate)	%	-	101
	Trihalomethanes	Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5
		Dibromochloromethane (THM)	µg/L	0.5	<0.5
		Bromoform (THM)	µg/L	0.5	<0.5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Water — **Method: ME-(AU)-[ENV]AN433**

Sample Number		Parameter	Units	LOR	Result
LB250880.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	90
		d8-toluene (Surrogate)	%	-	90
		Bromofluorobenzene (Surrogate)	%	-	101

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Alkalinity

Method: ME-(AU)-[ENV]AN135

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232993.001	LB250802.023	Total Alkalinity as CaCO3	mg/L	5	97	95	20	2
SE233033.002	LB250802.024	Total Alkalinity as CaCO3	mg/L	5	190	200	18	3

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232889.001	LB250502.014	Sulfate, SO4	mg/L	1	98	98	16	0
SE232924.003	LB250502.018	Chloride	mg/L	1	240	250	15	2
		Sulfate, SO4	mg/L	1	45	43	17	3

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232934.008	LB250500.014	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	0

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232965.002	LB250603.014	Calcium, Ca	mg/L	0.1	180	180	15	0
		Magnesium, Mg	mg/L	0.1	570	570	15	0
		Potassium, K	mg/L	0.2	54	53	15	1
		Sodium, Na	mg/L	0.1	3600	3600	15	1
SE232974.001	LB250603.019	Calcium, Ca	mg/L	0.1	47	46	15	1
		Magnesium, Mg	mg/L	0.1	140	140	15	1

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232924.003	LB250503.013	Total Phenols	mg/L	0.05	<0.05	<0.05	187	0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE233033.003	LB250756.014	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	8.1	8.1	16	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	2	1	80	15
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	13	12	23	4
		Zinc, Zn	µg/L	5	19	15	45	27
SE233048.004	LB250756.021	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	<1	200	0
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232924.007	LB250499.014		TRH C10-C14	µg/L	50	<50	<50	200	0
			TRH C15-C28	µg/L	200	<200	<200	200	0
			TRH C29-C36	µg/L	200	<200	<200	200	0
			TRH C37-C40	µg/L	200	<200	<200	200	0
			TRH C10-C40	µg/L	320	<320	<320	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	<60	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	<500	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	<500	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

VOCs in Water (continued) — **Method: ME-(AU)-[ENV]AN433**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232924.002	LB250880.025	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	200	0
			1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	172	0
			cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	200	0
			trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	200	0
			1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	200	0
		Halogenated	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	200	0
		Aliphatics	Chloromethane	µg/L	5	<5	<5	200	0
			Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	174	0
			Bromomethane	µg/L	10	<10	<10	200	0
			Chloroethane	µg/L	5	<5	<5	200	0
			Trichlorofluoromethane	µg/L	1	<1	<1	200	0
			Iodomethane	µg/L	5	<5	<5	200	0
			1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	200	0
			Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	200	0
			Allyl chloride	µg/L	2	<2	<2	200	0
			trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	200	0
			1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	200	0
			cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	200	0
			Bromochloromethane	µg/L	0.5	<0.5	<0.5	200	0
			1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	200	0
			1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	200	0
			1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	200	0
			Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	200	0
			Dibromomethane	µg/L	0.5	<0.5	<0.5	200	0
			Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5	200	0
			1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	200	0
			1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	200	0
			Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5	200	0
			1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	200	0
			cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	200	0
			1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	200	0
			1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	200	0
			trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	200	0
			1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	200	0
			Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	200	0
		Halogenated	Chlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
		Aromatics	Bromobenzene	µg/L	0.5	<0.5	<0.5	200	0
			2-chlorotoluene	µg/L	0.5	<0.5	<0.5	200	0
			4-chlorotoluene	µg/L	0.5	<0.5	<0.5	200	0
			1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
			1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	200	0
			1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
			1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
			1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	200	0
		Monocyclic	Benzene	µg/L	0.5	<0.5	<0.5	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	<0.5	200	0
			Ethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			m/p-xylene	µg/L	1	<1	<1	200	0
			o-xylene	µg/L	0.5	<0.5	<0.5	200	0
			Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5	200	0
			Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	<0.5	200	0
			n-propylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			1,3,5-trimethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			tert-butylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			1,2,4-trimethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			sec-butylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			p-isopropyltoluene	µg/L	0.5	<0.5	<0.5	200	0
			n-butylbenzene	µg/L	0.5	<0.5	<0.5	200	0
		Nitrogenous	Acrylonitrile	µg/L	0.5	<0.5	<0.5	200	0
		Oxygenated	Acetone (2-propanone)	µg/L	10	<10	<10	200	0
		Compounds	MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	<0.5	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232924.002	LB250880.025	Oxygenated	Vinyl acetate	µg/L	10	<10	<10	200	0
		Compounds	MEK (2-butanone)	µg/L	10	<10	<10	200	0
			MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5	200	0
			2-hexanone (MBK)	µg/L	5	<5	<5	200	0
		Polycyclic	Naphthalene (VOC)	µg/L	0.5	<0.5	<0.5	200	0
		Sulphonated	Carbon disulfide	µg/L	2	<2	<2	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	8.7	8.6	30	0
			d8-toluene (Surrogate)	µg/L	-	8.9	8.9	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	10.1	10.1	30	0
		Trihalomethan	Chloroform (THM)	µg/L	0.5	<0.5	<0.5	200	0
		es	Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	200	0
			Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	200	0
			Bromoform (THM)	µg/L	0.5	<0.5	<0.5	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE232924.002	LB250880.026		TRH C6-C10	µg/L	50	<50	<50	200	0
			TRH C6-C9	µg/L	40	<40	<40	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	8.7	8.6	30	0
			d8-toluene (Surrogate)	µg/L	-	8.9	8.9	30	1
			Bromofluorobenzene (Surrogate)	µg/L	-	10.1	10.1	30	0
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	<0.5	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Alkalinity

Method: ME-(AU)-[ENV]AN135

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250802.002	Total Alkalinity as CaCO3	mg/L	5	68	59.5	76 - 124	114

Anions by Ion Chromatography in Water

Method: ME-(AU)-[ENV]AN245

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250502.002	Chloride	mg/L	1	19	20	80 - 120	95
	Sulfate, SO4	mg/L	1	19	20	80 - 120	94

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250603.002	Calcium, Ca	mg/L	0.1	46	50.5	80 - 120	91
	Magnesium, Mg	mg/L	0.1	49	50.5	80 - 120	97
	Potassium, K	mg/L	0.2	58	55	80 - 120	106
	Sodium, Na	mg/L	0.1	55	50.5	80 - 120	109

OC Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250499.002		Heptachlor	µg/L	0.1	0.2	0.2	60 - 140	114
		Aldrin	µg/L	0.1	0.2	0.2	60 - 140	103
		Delta BHC	µg/L	0.1	0.2	0.2	60 - 140	121
		Dieldrin	µg/L	0.1	0.2	0.2	60 - 140	122
		Endrin	µg/L	0.1	0.3	0.2	60 - 140	127
		p,p'-DDT	µg/L	0.1	0.3	0.2	60 - 140	130
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	µg/L	-	0.14	0.15	40 - 130	90

OP Pesticides in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250499.002		Dichlorvos	µg/L	0.5	7.1	8	60 - 140	89
		Diazinon (Dimpylate)	µg/L	0.5	7.8	8	60 - 140	97
		Chlorpyrifos (Chlorpyrifos Ethyl)	µg/L	0.2	7.4	8	60 - 140	93
		Ethion	µg/L	0.2	7.2	8	60 - 140	90
	Surrogates	2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	70
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	74

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250499.002		Naphthalene	µg/L	0.1	25	40	60 - 140	63
		Acenaphthylene	µg/L	0.1	33	40	60 - 140	81
		Acenaphthene	µg/L	0.1	33	40	60 - 140	83
		Phenanthrene	µg/L	0.1	35	40	60 - 140	87
		Anthracene	µg/L	0.1	34	40	60 - 140	86
		Fluoranthene	µg/L	0.1	35	40	60 - 140	88
		Pyrene	µg/L	0.1	35	40	60 - 140	87
		Benzo(a)pyrene	µg/L	0.1	38	40	60 - 140	96
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.3	0.5	40 - 130	52
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	70
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	74

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250503.002	Total Phenols	mg/L	0.05	0.18	0.2	80 - 120	92

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250756.002	Arsenic, As	µg/L	1	18	20	80 - 120	91
	Cadmium, Cd	µg/L	0.1	21	20	80 - 120	103
	Chromium, Cr	µg/L	1	21	20	80 - 120	107
	Copper, Cu	µg/L	1	21	20	80 - 120	106
	Lead, Pb	µg/L	1	19	20	80 - 120	97
	Nickel, Ni	µg/L	1	21	20	80 - 120	106

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250756.002	Zinc, Zn	µg/L	5	20	20	80 - 120	102

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250499.002		TRH C10-C14	µg/L	50	1400	1200	60 - 140	115
		TRH C15-C28	µg/L	200	1400	1200	60 - 140	118
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	120
	TRH F Bands	TRH >C10-C16	µg/L	60	1400	1200	60 - 140	120
		TRH >C16-C34 (F3)	µg/L	500	1300	1200	60 - 140	108
		TRH >C34-C40 (F4)	µg/L	500	830	600	60 - 140	139

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250880.002	Halogenated	1,1-dichloroethene	µg/L	0.5	60	45.45	60 - 140	132
	Aliphatics	1,2-dichloroethane	µg/L	0.5	57	45.45	60 - 140	126
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	54	45.45	60 - 140	119
	Halogenated	Chlorobenzene	µg/L	0.5	50	45.45	60 - 140	109
	Monocyclic	Benzene	µg/L	0.5	54	45.45	60 - 140	118
	Aromatic	Toluene	µg/L	0.5	54	45.45	60 - 140	118
		Ethylbenzene	µg/L	0.5	52	45.45	60 - 140	114
		m/p-xylene	µg/L	1	100	90.9	60 - 140	114
		o-xylene	µg/L	0.5	51	45.45	60 - 140	113
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.0	10	60 - 140	100
		d8-toluene (Surrogate)	µg/L	-	10.3	10	70 - 130	103
		Bromofluorobenzene (Surrogate)	µg/L	-	10.1	10	70 - 130	101
	Trihalomethan	Chloroform (THM)	µg/L	0.5	55	45.45	60 - 140	121

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB250880.002		TRH C6-C10	µg/L	50	830	946.63	60 - 140	87
		TRH C6-C9	µg/L	40	700	818.71	60 - 140	86
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.0	10	60 - 140	100
		d8-toluene (Surrogate)	µg/L	-	10.3	10	70 - 130	103
		Bromofluorobenzene (Surrogate)	µg/L	-	10.1	10	70 - 130	101
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	510	639.67	60 - 140	80

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN295

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232915.001	LB250503.004	Total Phenols	mg/L	0.05	0.17	<0.1	0.2	84

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE232924.001	LB250756.004	Arsenic, As	µg/L	1	20	<1	20	98
		Cadmium, Cd	µg/L	0.1	21	<0.1	20	104
		Chromium, Cr	µg/L	1	22	<1	20	107
		Copper, Cu	µg/L	1	22	1	20	102
		Lead, Pb	µg/L	1	19	<1	20	95
		Nickel, Ni	µg/L	1	25	4	20	103
		Zinc, Zn	µg/L	5	37	13	20	120

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE232924.007	LB250880.027	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5	45.45	114
			Toluene	µg/L	0.5	<0.5	45.45	117
			Ethylbenzene	µg/L	0.5	<0.5	45.45	113
			m/p-xylene	µg/L	1	<1	90.9	112
			o-xylene	µg/L	0.5	<0.5	45.45	112
		Polycyclic	Naphthalene (VOC)	µg/L	0.5	<0.5	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	8.9	-	94
			d8-toluene (Surrogate)	µg/L	-	8.8	-	101
			Bromofluorobenzene (Surrogate)	µg/L	-	10.0	-	99

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE232924.007	LB250880.027		TRH C6-C10	µg/L	50	<50	946.63	76
			TRH C6-C9	µg/L	40	<40	818.71	77
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	8.9	-	94
			d8-toluene (Surrogate)	µg/L	-	8.8	-	101
			Bromofluorobenzene (Surrogate)	µg/L	-	10.0	-	99
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	-	-
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	639.67	64

MATRIX SPIKE DUPLICATES

SE232924 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

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SGS Environmental Services is accredited by NATA for Chemical Testing (Reg.No.2562) and Quality System compliance to ISO/IEC 17025. The QC parameters contained within are designed to meet NEPM 1999 requirements.

Quality Control samples included in any analytical run are listed below.

Reagent/Analysis Blank (BLK) **Method Blank (MB)**	Sample free reagents carried through the preparation/extraction/digestion procedure and analysed at the beginning of every sample batch analysis. A reagent blank is prepared and analysed with every batch of samples plus with each new batch of solvent prior to use.
Sample Matrix Spike (MS) & Matrix Spike Duplicate (MSD)	Sample replicates spiked with identical concentrations of target analyte(s). The spiking occurs during the sample preparation and prior to the extraction/digestion procedure. They are used to document the precision and bias of a method in a given sample matrix. Where there is not enough sample available to prepare a spiked sample, another known soil/sand or water may be used. A duplicate spiked sample is analysed at least every 20 samples.
Surrogate Spike (SS)	At least one but up to three surrogate compounds are added to all samples requiring analysis for organics prior to extraction. Used to determine the extraction efficiency. They are organic compounds which are similar to the target analyte(s) in chemical composition and behaviour in the analytical process, but which are not normally found in environmental samples. Where possible they are surrogate compounds recommended by the USEPA.
Control Matrix Spike (CMS)	To ensure spike recoveries can be determined for every batch of samples a control matrix is spiked with identical concentrations of target analyte(s) and then analysed. These results allow recoveries to be determined in the event that the matrix spikes are unusable (eg. matrix spikes performed on heavily contaminated samples). These are analysed at least every 20 samples.
Internal Standard (IS)	Added to all samples requiring analysis for organics (where relevant) after the extraction process; the compounds serve to give a standard of retention time and response, which is invariant from run-to-run with the instruments. Where possible they are standard compounds recommended by the USEPA.
Lab Duplicates (D)	A separate portion of a sample being analysed that is treated the same as the other samples in the batch. One duplicate is processed at least every 10 samples.
Lab Control Standards/Samples (LCS)	Prepared from a source independent of the calibration standards. At least one control standard is included in each run to confirm calibration validity. Thereafter they are analysed at least every one in 20 samples plus at the end of each analytical run. This data is not reported.
Continuous Calibration Verification (CCV) or **Calibration Check Standard & Blank**	A calibration check standard or CCV and blank are run after every 20 samples of an instrumental analysis run to assess analytical drift. Calibration Standards are checked old versus new with a criteria of ±10%

Quality Assurance Programs are listed below:

Statistical analysis of Quality Control data (SQC)	Quality control data is plotted on control charts using the APHA procedure with warning and control limits at 2 and 3 standard deviations respectively. See also QMS Procedure "Statistical Quality Control".
Certified Reference Materials (CRM/SRM)	Certified Reference Materials and Standards are regularly analysed. These materials/standards have certified reference values for various parameters.
Proficiency Testing	Regular proficiency test samples are analysed by our laboratories. SGS Environmental participates in a number of programs. Results and proficiency status are compiled and sent to participating laboratory post data interpretation. Failure to comply with acceptable values result in further investigations.
Inter-laboratory & Intra-laboratory Testing	SGS Environmental Services has schedules in the Quality Systems to participate in Inter/Intra laboratory testing conducted internally and by other parties.
Data Acceptance Criteria Unless otherwise specified in the method or method manual the following general criteria apply to all inorganic tests. All recoveries are to be reported to 3 significant figures.	Failure to meet the internal acceptance criteria will result in sample batch repeats dependent upon investigation outcomes. For data to be accepted: <u>Inorganics (water samples)</u> • For all inorganic analytes the Reagent & Method Blanks must be less than the LOR. • The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within ±15%. • Control Standards must be 80-120% of the accepted value. • The Calibration Check Blanks must be less than the LOR. • Lab Duplicates RPD to be <15%*. Note: If client <u>field</u> duplicates do not meet this criteria it may indicate heterogeneity and shall be noted on the data reports for QC samples. • Sample (and if applicable Control) Matrix Spike♬ Duplicate recovery RPD to be <30%. • Where CRMs are used, results to be within ± 2 standard deviations of the expected value. <u>Inorganics (soil samples)</u> • For all inorganic analytes the Reagent & Method Blanks must be less than the LOR. • The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within ±15%. • Control Standards must be 80-120% of the accepted value. • The Calibration Check Blanks must be less than the LOR. • Lab duplicate RPD to be <30%* for sample results greater than 10 times LOR. • Sample Matrix Spike Duplicate (MS♬/MSD) recovery RPD to be <30%. In the event that the matrix spike has been applied to samples whose matrix or contamination is problematic to the method then these acceptance criteria apply to the Control Matrix Spike (CMS/D). • Where CRMs are used, results to be within ± 2 standard deviations of the expected value.

Data Acceptance Criteria Unless otherwise specified in the method or method manual the following general criteria apply to all organic tests. All recoveries are to be reported to 3 significant figures.	Organics • Volatile & extractable Reagent & Method Blanks must contain levels less than or equal to LOR. • The Calibration Check Standards or Continuous Calibration Verification (CCV) must be within ±25%. Some analytes may have specific criteria. • Control Standards (LCS/CMS) and Certified Reference Materials (CRM) recoveries are to be within established control limits or as a default 60-140% unless compound specific limits apply. • Retention times are to vary by no more than 0.2 min. • **At least two of three** routine level soil sample Surrogate Spike (SS) recoveries are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as acceptance criterion. Any recoveries outside these limits will have comment. • Water sample Surrogates Spike (SS) recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion. Any recoveries outside these limits will have comment. • Lab Duplicates (D) must have a RPD <30%*. • Sample Matrix Spike Duplicate (MS♬/MSD) recovery RPD to be <30%. In the event that the matrix spike has been applied to samples whose matrix or contamination is problematic to the method then these acceptance criteria apply to the Control Matrix Spike (CMS/D).

*Only if results are at least 10 times the LOR otherwise no acceptance criteria for RPD's apply. Application of more stringent criteria shall be applied for clean water sample from water boards and any other nominated client contracts. Nominal 10xLOR criteria are dropped to 5xLOR where specified.
♬Matrix do not readily equate to definitive recovery due to inherent matrix interferences and thus do not have recovery compliance values set. As a guide inorganic recoveries should be between 70-130% and for organics 60-130%

Batch Structure Summary

An analytical batch is nominally considered as 20 samples or smaller. As a standard template the following should be **used as a guide** according to the above Quality Control Types:

1	MB	16	UNK_DUP
2	STD1	17	MS
3	STD2	18	MS_DUP
4	STD3	19	UNK 11
5	LCS	20	UNK 12
6	BLK	21	UNK 13
7	UNK 1	22	UNK 14
8	UNK 2	23	UNK 15
9	UNK 3	24	UNK 16
10	UNK 4	25	UNK 17
11	UNK 5	26	UNK 18
12	UNK 6	27	UNK 19
13	UNK 7	28	UNK 20 (SS if applicable)
14	UNK 8	29	UNK_DUP
15	UNK 9	30	CCV
16	UNK 10 (SS if applicable)	31	CRM / SRM / CMS / LCS

Table QC1 - Containers, Preservation Requirements and Holding Times - Soil			
Parameter	Container	Preservation	Maximum Holding Time
Acid digestible metals and metalloids - Total and TCLP (As,Cd.,Cu,Cr,Ni,Pb,Zn)	Glass with Teflon Lid	Nil	6 months
Mercury	Glass with Teflon Lid	Nil	28 days
TPH / BTEX / VOC / SVOC / CHC	Glass with Teflon Lid	4^oC, zero headspace	14 days
PAHs (total and TCLP)	Glass with Teflon Lid	4^oC [1]	14 days
Phenols	Glass with Teflon Lid	4^oC [1]	14 days
OCPs, OPPs and total PCBs	Glass with Teflon Lid	4^oC [1]	14 days
Asbestos	Sealed Plastic Bag	Nil	N/A

Table QC2 - Containers, Preservation Requirements and Holding Times - Water			
Parameter	Container Volume (mL)	Preservation	Maximum Holding Time
Heavy Metals	125mL Plastic	Field filtration 0.45μm HNO_3 / 4^oC	6 months
Cyanide	125mL Amber Glass	pH > 12 NaOH / 4^oC	6 months
TPH (C6-C9) / BTEX / VOCs SVOCs / CHCs	4 x 43mL Glass	HCl / 4^oC [1]	14 days
TPH (C10-C36) / PAH / Phenolics OCP / OPP / TDS / pH	3 x 1L Amber Glass	None / 4^oC [1]	28 days

Notes: [1] = Extraction within 14 days, Analysis within 40 days.

Table QC3 - Analytical Parameters, PQLs and Methods - Soil			
Parameter	**Unit**	**PQL**	**Method Reference**
Metals in Soil			
Arsenic - As[1]	mg / kg	1	USEPA 200.7
Cadmium - Cd[1]	mg / kg	0.5	USEPA 200.7
Chromium - Cr[1]	mg / kg	1	USEPA 200.7
Copper - Cu[1]	mg / kg	1	USEPA 200.7
Lead - Pb[1]	mg / kg	1	USEPA 200.7
Mercury - Hg[2]	mg / kg	0.1	USEPA 7471A
Nickel - Ni[1]	mg / kg	1	USEPA 200.7
Zinc - Zn[1]	mg / kg	1	USEPA 200.7
Total Petroleum Hydrocarbons (TPHs) in Soil			
C_6-C_9 fraction	mg / kg	25	USEPA 8260
C_{10}-C_{14} fraction	mg / kg	50	USEPA 8000
C_{15}-C_{28} fraction	mg / kg	100	USEPA 8000
C_{29}-C_{36} fraction	mg / kg	100	USEPA 8000
BTEX in Soil			
Benzene	mg / kg	1	USEPA 8260
Toluene	mg / kg	1	USEPA 8260
Ethylbenzene	mg / kg	1	USEPA 8260
m & p Xylene	mg / kg	2	USEPA 8260
o- Xylene	mg / kg	1	USEPA 8260
Other Organic Contaminants in Soil			
PAHs	mg / kg	0.05-0.2	USEPA 8270
CHCs	mg / kg	1	USEPA 8260
VOCs	mg / kg	1	USEPA 8260
SVOCs	mg / kg	1	USEPA 8260
OCPs	mg / kg	0.1	USEPA 8140, 8080
OPPs	mg / kg	0.1	USEPA 8140, 8080
PCBs	mg / kg	0.1	USEPA 8080
Phenolics	mg / kg	5	APHA 5530
Asbestos			
Asbestos	mg / kg	Presence / Absence	AS4964-2004

Notes:

1. Acid Soluble Metals by ICP-AES
2. Total Recoverable Mercury

Table QC4 - Analytical Parameters, PQLs and Methods - Groundwater

Parameter	Unit	PQL	Method
Heavy Metals			
Antimony - Sb	µg/L	1	USEPA 200.8
Arsenic - As	µg/L	1	USEPA 200.8
Beryllium - Be	µg/L	0.5	USEPA 200.8
Cadmium - Cd	µg/L	0.1	USEPA 200.8
Chromium - Cr	µg/L	1	USEPA 200.8
Cobalt - Co	µg/L	1	USEPA 200.8
Copper - Cu	µg/L	1	USEPA 200.8
Lead - Pb	µg/L	1	USEPA 200.8
Mercury - Hg	µg/L	0.5	USEPA 7471A
Molybdenum - Mo	µg/L	1	USEPA 200.8
Nickel - Ni	µg/L	1	USEPA 200.8
Selenium - Se	µg/L	1	USEPA 200.8
Silver - Ag	µg/L	1	USEPA 200.8
Tin (inorg.) - Sn	µg/L	1	USEPA 200.8
Nickel - Ni	µg/L	1	USEPA 200.8
Zinc - Zn	µg/L	1	USEPA 200.8
Total Petroleum Hydrocarbons (TPHs)			
C_6-C_9 fraction	µg/L	10	USEPA 8220A / 8000
C_{10}-C_{14} fraction	µg/L	50	USEPA 8000
C_{15}-C_{28} fraction	µg/L	100	USEPA 8000
C_{29}-C_{36} fraction	µg/L	100	USEPA 8000
BTEX			
Benzene	µg/L	1	USEPA 8220A
Toluene	µg/L	1	USEPA 8220A
Ethylbenzene	µg/L	1	USEPA 8220A
m- & p-Xylene	µg/L	2	USEPA 8220A
o-Xylene	µg/L	1	USEPA 8220A
Polyciclic Aromatic Hydrocarbons (PAHs)			
PAHs	µg/L	0.1	USEPA 8270
Benzo(a)pyrene	µg/L	0.01	USEPA 8270
OrganoChlorine Pesticides (OCPs)			
Aldrin	µg/L	0.001	USEPA 8081
Chlordane	µg/L	0.001	USEPA 8081
DDT	µg/L	0.001	USEPA 8081
Dieldrin	µg/L	0.001	USEPA 8081
Endosulfan	µg/L	0.001	USEPA 8081
Endrin	µg/L	0.001	USEPA 8081
Heptachlor	µg/L	0.001	USEPA 8081
Lindane	µg/L	0.001	USEPA 8081
Toxaphene	µg/L	0.001	USEPA 8081

Parameter	Unit	PQL	Method
Chlorinated Hydrocarbons (CHCs)			
1,2-dichlorobenzene	µg/L	1	USEPA 8260B
1,3-dichlorobenzene	µg/L	1	USEPA 8260B
1,4-dichlorobenzene	µg/L	1	USEPA 8260B
1,2,3-trichlorobenzene	µg/L	1	USEPA 8260B
1,2,4-trichlorobenzene	µg/L	1	USEPA 8260B
Hexachlorobutadeine	µg/L	1	USEPA 8260B
1,1,2-trichloroethane	µg/L	1	USEPA 8260B
Hexachloroethane	µg/L	10	USEPA 8270D
Other CHCs	µg/L	1	USEPA 8260B
Volatile Organic Compounds (VOCs)			
Aniline	µg/L	10	USEPA 8260B
2,4-dichloroaniline	µg/L	10	USEPA 8260B
3,4-dichloroaniline	µg/L	10	USEPA 8260B
Nitrobenzene	µg/L	50	USEPA 8260B
2,4-dinitrotoluene	µg/L	50	USEPA 8260B
2,4,6-trinitrotoluene	µg/L	50	USEPA 8260B
Phenolic Compounds			
Phenol	µg/L	10	USEPA 8041
2-chlorophenol	µg/L	10	USEPA 8041
4-chlorophenol	µg/L	10	USEPA 8041
2, 4-dichlorophenol	µg/L	10	USEPA 8041
2,4,6-trichlorophenol	µg/L	10	USEPA 8041
2,3,4,6-tetrachlorophenol	µg/L	10	USEPA 8041
Pentachlorophenol	µg/L	10	USEPA 8041
2,4-dinitrophenol	µg/L	10	USEPA 8041
Miscellaneous Parameters			
Total Cyanide	µg/L	5	APHA 4500C&E-CN
Fluoride	µg/L	10	APHA 4500 F-C
Salinity (TDS)	mg/L	1	APHA 2510
pH	units	0.1	APHA 4500H+
OrganoPhosphate Pesticides (OPPs)			
Azinphos Methyl	µg/L	0.01	USEPA 8141
Chloropyrifos	µg/L	0.01	USEPA 8141
Diazinon	µg/L	0.01	USEPA 8141
Dimethoate	µg/L	0.01	USEPA 8141
Fenitrothion	µg/L	0.01	USEPA 8141
Malathion	µg/L	0.01	USEPA 8141
Parathion	µg/L	0.01	USEPA 8141
Temephos	µg/L	0.01	USEPA 8141
Polychlorinated Biphenyls (PCBs)			
Individual PCBs	µg/L	0.01	USEPA 8081

Table QC5 - QC Sample Data Acceptance Criteria

QC Sample Type	Method of Assessment	Acceptable Range
Field QC		
Blind Duplicates and Split Samples	The assessment of split duplicate is undertaken by calculating the Relative Percent Difference (RPD) of the duplicate concentration compared with the primary sample concentration. The RPD is defined as: $RPD = 100 \times \frac{\lvert X_1 - X_2 \rvert}{\text{mean}(X1, X2)}$ Where: X_1 and X_2 are the concentrations of the primary and duplicate samples.	The acceptable range depends upon the levels detected: - 0-150% RPD (when the average concentration is <5 times the LOR/PQL) - 0-75% RPD (when the average concentration is 5 to 10 times the LOR/PQL) - 0-50% RPD (when the average concentration is >10 times the LOR/PQL)
Rinsate & Trip Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL
Laboratory prepared Trip Spike	The Trip Spike is analysed after returning from the field and the % recovery of the known spike is calculated.	70 - 130%
Laboratory QC		
Laboratory Duplicates	Assessment of Lab Duplicate RPD as per Blind Duplicates and Split Samples.	Lab Duplicate RPD < 15% (Inorganics) Lab Duplicate RPD < 30% (Organics) for sample results > 10 LOR
Surrogates	Assessment is undertaken by determining the percent recovery of the known surrogate spike (SS) or addition to the sample.	at least 2 SS recoveries to be within 70-130% subject to matrix effects (Organics)
Matrix Spikes Laboratory Control Samples	$\%\ \text{Recovery} = 100 \times \frac{C - A}{B}$ Where: A = Concentration of analyte determined in the original sample; B = Added Concentration; and C = Calculated Concentration.	80-120% (Inorganics / Metals) 60-140% (Organics) 10-140% (SVOC and Speciated Phenols) If the result is outside the above ranges, the result must be <3x Standard Deviation of the Historical Mean (calculated over the past 12 months).
Sample Matrix Spike Duplicates	Recovery RPD	<30% (Inorganics & Organics)
Calibration Check Standards	Continuous Calibration Verification (CCV)	CCV must be within ±15% (inorganics) CCV must be within ±25% (inorganics)
Reagent, Method & Calibration Check Blanks	Each blank is analysed as per the original samples.	Analytical Result <LOR/PQL

Note: PQL - Laboratory Practical Quantitation Limit (PQL) or the minimum detection limit for a particular analyte.
LOR = Limit of Reporting