Port of Newcastle Operations Pty Ltd

Denison Street Development

Detailed Site Investigation

March 2021

Executive summary

GHD Pty Ltd (GHD) was commissioned by Port of Newcastle to undertake a detailed contamination investigation for 46 Fitzroy Street and 65 Denison Street, Carrington, NSW, referred to as Lot 33 DP 1078910 (the site).

GHD understands that development options are being considered for the site, including an on-ground carpark and light industrial or commercial buildings between one and four storeys.

A Preliminary Site Investigation (PSI) was undertaken by GHD in April 2020 which identified potential for contamination to be present on site associated with:

- Historical filling on the site including reclaimed sediments, imported fill, ballast and waste slag
- Historical use of herbicides or pesticides across the site as part of property maintenance
- Spillage or leakage of oils, fuels, herbicides or pesticides potentially stored on site
- Potential spills or leaks of oils or fuels from manufacturing machinery or vehicles previously used on site
- Potential for hazardous building materials to be present from previously demolished buildings
- Migration of off-site groundwater contamination into the site

The objectives of the DSI were to assess if the site is, or can be made suitable for the proposed commercial/industrial land use. A secondary objective is to provide a waste classification of the soil material across the site that may be excavated and removed off-site during development, in accordance with the NSW EPA Waste Classification Guidelines (2014).

The scope of works for the DSI included the following:

- A site history review including review of the previous Phase 1 Contamination Assessment report (GHD 2020) and a review of publicly available records including Council records and NSW EPA notices under the Contaminated Land Management Act (1997). The review of historical title documents were not included in the scope of works.
- Review of site geology, hydrogeology, topography and hydrogeology information and previous reports pertaining to the site.
- Preparation of a Site Specific Safety Plan.
- Completion of a Dial Before You Dig (DBYD) search and engage an underground services locator to identify any services in the area.
- Excavation of nineteen boreholes using a track mounted drill rig and analysis of selected soil samples for potential contaminants of concern.
- Preparation of this report with reference to NSW EPA 2020 summarising the results of the investigation and recommendations for further investigations or remediation (if required).

Following detailed review of previous and current investigations, the conclusions from the DSI are summarised as follows:

- The aerial photo review and site inspection confirmed that there were no additional disturbed areas or likely source areas apart from those identified in the preliminary CSI (GHD 2020).

- Fill materials were generally observed in the top 1.0 – 1.2 metres below ground level and were underlain by sands and silty clays.
- Aesthetic impacts were not observed in the fill materials across the site. Brick fragments and polystyrene/glass and a weak organic odour and weak hydrogen sulphide odour were reported at BH10 and BH16 (western portion); however these are not considered to pose an aesthetic impact based on the commercial/industrial nature of the proposed land use. The odours did not correlate with any soil exceedances at BH10 and BH16.
- Soil results were below the adopted human health assessment criteria for commercial/industrial land use across both portions of the site. It is therefore considered that there are no vapour intrusion risks to human health are present at the site and no further soil or groundwater assessment is required.
- Concentrations of heavy metals (arsenic, copper, lead, nickel and zinc) were above the ecological criteria across the site; however 95% UCL calculations were all below the guidelines indicating this is not an issue. The exception to this was a hotspot identified on the eastern portion of the site at BH04_0.3-0.4 with heavy metals (arsenic, copper, nickel and zinc) exceeding the EILs by up to more two orders of magnitude and therefore excluded in the 95% UCL calculations. All concentrations in the deeper sample analysed at this location (BH04_1.0-1.1) were below the assessment criteria indicating that contamination is limited to the upper 0.5 m. Concentrations of TRH F2 were also above the ecological criteria at BH04_0.3-0.4. The hotspot is not considered to be an issue given the commercial/industrial land use proposed for the Site. However, it should be considered during future landscaping for sensitive plant species. In addition, soils excavated from this area should not be stockpiled near waterways or sensitive areas. This should be incorporated into a construction management plan for the Site.
- Concentrations of benzo(a)pyrene exceeded the ecological criteria in some samples across the western portion of the site; however all concentrations were below the high reliability criteria from CRC Care 2017 Technical Report 39.
- In-situ waste classification classified the soils across the western portion as General Solid Waste, however excavations in the vicinity of BH04 on the eastern portion would be classified as “hazardous waste” and further sampling would be required to potentially reduce the waste classification prior to disposal.
- An updated conceptual site model was undertaken following the DSI which concluded that there are no possible or potentially complete linkages between identified contamination and identified receptors at the site. The exception to this was the risk to ecological receptors from the hotspot on the eastern portion of the site (BH04). Given the proposed commercial/industrial land use, it is unlikely that ecological receptors will be impacted; however it should be considered during future landscaping for sensitive plant species.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 13 and the assumptions and qualifications contained throughout the report.

List of abbreviations

ASS	Acid Sulfate Soils
ACM	Asbestos Containing Material
ARTC	Australian Rail Track Corporation
BaP	Benzo(a)pyrene
BTEX	Benzene, Toluene, Ethyl benzene, Xylenes
CLM Act	Contaminated Land Management Act 1997
CSA	Contamination Site Assessment
CSM	Conceptual Site Model
DA	Development Application
DP	Deposited Plan
EIL	Ecological Investigation Level
EPA	Environment Protection Authority
HIL	Health Investigation Level (relating to defined land use scenario)
mbgs	Metres below ground surface
mbgl	Metres below ground level
mbTOC	Metres below Top of Casing
NATA	National Association of Testing Authorities
NEPC	National Environment Protection Council
NEPM	National Environment Protection (Assessment of Site Contamination) Measure
OCP	Organochlorine pesticides
OPP	Organophosphorus pesticides
PACM	Potential Asbestos Containing Material
PAH	Polycyclic Aromatic Hydrocarbons
PFAS	Per- and poly-fluoroalkyl substances
PON	Port of Newcastle
ppm	Parts Per Million
SEPP	State Environmental Planning Policy
SWL	Standing Water Level
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons

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Appendices

1. Introduction

1.1 Background

GHD Pty Ltd (GHD) was commissioned by Port of Newcastle (PoN) to undertake a detailed site investigation (DSI) for 46 Fitzroy Street and 65 Denison Street, Carrington, NSW, referred to as Lot 33 DP 1078910 (the Site) (Figure 1, Appendix A).

GHD understands that development options are being considered for the Site, including an on-ground carpark and light industrial or commercial buildings between one and four storeys.

A Preliminary Site Investigation (PSI) was undertaken by GHD in April 2020 which identified potential for contamination to be present on Site associated with:

- Historical filling on the site including reclaimed sediments, imported fill, ballast and waste slag
- Historical use of herbicides or pesticides across the site as part of property maintenance
- Spillage or leakage of oils, fuels, herbicides or pesticides potentially stored on site
- Potential spills or leaks of oils or fuels from manufacturing machinery or vehicles previously used on site
- Potential for hazardous building materials to be present from previously demolished buildings
- Migration of off-site groundwater contamination into the site

1.2 Objectives

The objectives of the DSI were to assess if the Site is, or can be made, suitable for the proposed commercial/industrial land use. A secondary objective is to provide a waste classification of the soil material across the Site that may be excavated and removed offsite during development, in accordance with the NSW EPA Waste Classification Guidelines (2014).

1.3 Scope of work

The scope of works for the DSI included the following:

- A site history review including review of the previous Phase 1 Contamination Assessment report (GHD 2020) and a review of publicly available records including Council records and NSW EPA notices under the Contaminated Land Management Act (1997). The review of historical title documents were not included in the scope of works.
- Review of site geology, hydrogeology, topography and hydrogeology information and previous reports pertaining to the site.
- Preparation of a Site Specific Safety Plan.
- Completion of a Dial Before You Dig (DBYD) search and engage an underground services locator to identify any services in the area.
- Excavation of nineteen boreholes using a track mounted drill rig and analysis of selected soil samples for potential contaminants of concern.
- Preparation of this report with reference to NSW EPA 2020 summarising the results of the investigation and recommendations for further investigations or remediation (if required).

1.4 Limitations and assumption

GHDs limitations are presented in Section 13. A number of assumptions were made for the purposes of preparing this report. These are identified within the text of the report.

2. Site information

The following section was prepared by reviewing GHD 2020 along with current publicly available information.

2.1 Site location and description

The site details are summarised below in Table 2-1**.**

Table 2-1 Site identification summary

Information	Details
Site Owner	Port of Newcastle
Site address	46 Fitzroy St, Carrington NSW
Current Lots and DP	**Lot Number** / **DP**: **33** / 1078910
Local Government Authority	Newcastle City Council
County	Australia
Current Zoning	The Site falls within the area mapped under the *State Environmental Planning Policy (Three Ports) 2014* (Three Ports SEPP) which was gazetted as of 31 May 2014. The introduction of the Three Ports SEPP has allowed development on land within the lease areas of Newcastle Port to be undertaken by the port operator and port tenants as exempt or complying development (subject to specified criteria and conditions), with the intention of allowing the efficient operation of the port.
Previous Land Use	Historical aerial photographs (Section 3.2) indicate the Site was reclaimed prior to 1954 and was predominantly used for warehousing and commercial facilities prior to the demolition of onsite infrastructure. The surrounding areas had been utilised for commercial, industrial and residential purposes from the 1950s onwards. Whilst minor changes occurred to the nearby wharf to the west and surrounding commercial buildings, there had been no major changes to areas immediately surrounding the site visible from the aerial photographs (see historical aerial photograph review in **Section 3.2.**
Current Land Use	Vacant land
Proposed Land Use	Light commercial/industrial (permitted under Three Ports SEPP)
Site Elevation (m AHD)	Across the Site, bed levels range from 4-5 m Australian Height Datum (AHD) from the eastern to the western side, with the northern boundary of the site sloping slightly to the north.
Site Area (Total)	Approximately 8,680 m^2
Site Location and Layout Plan	Refer to Figures 1 and 2, Appendix AA

Information	Details
Surrounding Land Use	**North**: Directly north of the Site is a series of industrial and commercial facilities including a café, workwear store and a glass and aluminium workshop. Connelly Park is located further north, followed by residential properties situated approximately 360 m north of the Site. **South**: A series of industrial sheds and a vacant property are located immediately south of the Site. The GrainCorp Grain Terminal is located further to the south east followed by the intersection of the Hunter River and Throsby Creek. **East**: To the east of the Site lies a series of commercial properties followed by residential properties along Wilson St, located approximately 130 m from the site. Residential and commercial properties are located immediately north east and south east of the site along Denison St. Further east lies a PON Berth and associated Australian Rail Track Corporation (ARTC) rail corridor/loop. **West**: Immediately west of the Site is a series of commercial properties followed by Thorsby Creek (located approximately 220 m from the site) and commercial industrial properties further west of Throsby Creek at Wickham.
Site Description	A site inspection was undertaken as a part of GHD's initial baseline contamination assessment by a GHD Environmental Engineer on 28 April 2020. Site photographs are presented in Appendix H. The following was reported during the site inspection: The majority of the Site was enclosed by a chain wire fence, with padlocked gates in the north western, north eastern and south eastern corners. There were two small grassed and gravel areas to the east and the west of the fence line which, at the time of the inspection, were being used as makeshift car parks. The eastern boundary of the Site (facing Denison Street) had kerb and guttering including a storm water pit. The western boundary (facing Fitzroy Street) extended onto the road without any form of stormwater drainage. However, kerb and guttering were present on the far western edge of Fitzroy Street. Within the fence line, the Site broadly consisted of a footprint of the former Eastern Warehouse, a footprint of the former Western Warehouse and a central corridor. The Eastern footprint consisted of an approximately 40 m x 40 m concrete slab on the eastern portion of the Site, whilst the remainder of the Site was predominantly covered with grass, bare soil and fine to medium grained gravel and ballast. The slab contained remnants of floor coverings and other building materials such as white ceramic tiles, weathered textured paint of various colours and a fibrous lining material observed within the northern edge of the slab between the portions of the slab and the tiles. Evidence of iron/rust staining was present on the concrete slab, particularly in the north eastern corner. A spill from an unidentified black substance was observed in the central northern portion of the slab, with no sheens or odours associated with the substance. The former Western Warehouse footprint was predominantly covered with grass, bare soil and loose gravels. The northern edge of the footprint was outlined by presumed concrete fence post footings located approximately 10 m from the northernmost site boundary. Large concrete and brick

Information	Details
	fragments up to 0.2 m in size were also observed within the footprint. Between the Eastern and Western footprints was an approximately 3 m wide grassed covered central corridor. Three square drains were spaced evenly throughout the corridor. A fourth identical drain was located in the north western portion of the site, in front of the Western Warehouse footprint. These drains comprised a small metal grate and were surrounded by green silt socks. Each drain was observed to be blocked significantly with leaf litter and soil. The southern portion of the Site was mostly grassed and covered in some areas with woodchips and palm trees. Three telegraph poles with overhead wires were located inside the western fence line. Fragments of broken PVC pipe, brick, concrete, glass, plastic and fibre cement were present across the entirety of the site No olfactory odours were detected across the site at the time of the inspection. It is noted that the Site conditions were similar to those described above during this investigation.

2.2 Environmental setting

The environmental setting is summarised in Table 2-2.

Table 2-2 Environmental setting

Item	Description
Topography	Across the Site, bed levels range from 4-5m AHD from the eastern to the western side, with the northern boundary of the site sloping slightly to the north.
Hydrology	The majority of the Site is generally flat land with the northern boundary of the site sloping slightly to the north. The regional hydrology of the area is expected to drain into Throsby Creek and the Hunter River. Surface water is expected to either infiltrate into the ground or run off into offsite stormwater systems eventually discharging to Throsby Creek to the west or into the Hunter River to the south and east of the site.
Geology and Soils	Reference to the 1:100,000 *Soil Landscape Sheet of the Newcastle Region*, published by the NSW Department of Land and Water Conservation (Matthei, 1995), indicates that the site is characterised by the Disturbed Terrain (xx) landscape unit. The disturbed terrain soil landscape unit is comprised of level plain to hummocky terrain, which has been extensively disturbed by human activity. This can include complete disturbance, removal or burial of the soil. Landfill includes soil, rock, building and waste materials. Local relief and slopes are highly variable. The original vegetation is usually completely cleared and replaced with turf or grassland. Soils are considered highly variable depending on the site. The Site has been subjected to historical filling from the late 1800s as part of the development of the suburb of Carrington. Imported fill was used to reclaim the site with ballast and waste slag thought to have been used as the fill material. Fill materials have been previously identified to depths greater than 3 metres overlying estuarine sediments and alluvial sands, silts and clays. Reference to the Newcastle 1:250, 000 Geology Sheet S1 56-2 produced by Division of Regional Geology, Geological Survey of NSW (1966) indicates that the site is underlain by the Quaternary unit comprising gravel, sand, silt, clary, Waterloo Rock Marine and fresh water deposits.

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>Acid Sulfate Soils</td><td>The Department of Land and Water Conservation Acid Sulfate Soil Risk Map for Newcastle (DLWC, 1997) indicates that the site is located within disturbed terrain, which may include filled areas which often occur during reclamation of low lying swamps for urban development. Soil investigations are required to assess these areas.
Given that the site is likely to include reclaimed dredged sediments, it is considered unlikely that the fill on site would contain acid sulphate soils (ASS). However, deeper undisturbed natural soils may potentially contain ASS. Further investigations would be required to assess the potential.</td></tr>
<tr><td>Hydrogeology</td><td>Based on site observations and GHD's understanding of the environmental setting of the site, regional groundwater would generally be expected to flow in a southerly direction towards Throsby Creek.
Hazmat Services (2017c) reported that based on the localised groundwater data, the groundwater beneath the site is anticipated to be present in an unconfined aquifer with alluvial sands at depths shallower than 5 m below ground surface.
Previous investigations by GHD (2017) and ERM (2014) undertaken in the Carrington NAT area reported groundwater between 0.5 and 3 m below ground level (bgl) which was tidally influenced in close proximity to the foreshore. Perched groundwater has also been encountered in shallow man-made deposits across Carrington.
GHD obtained database information from the WaterNSW groundwater database on 01 March 2021. The results of this search indicated that there are two registered groundwater wells within approximately 500 m of the site. Summary information for these wells is shown below Results from the groundwater bore search are presented in Appendix E.
<table>
<tr><th>Bore ID</th><th>Approximate Distance to Site</th><th>Standing Water Level (mbgl)</th><th>Water Bearing Zones (mbgl)</th><th>Final Depth (mbgl)</th><th>Salinity (mg/L)</th><th>Intended Purpose</th></tr>
<tr><td>GW202306</td><td>499 m NNW</td><td>1.40</td><td>1.4 – 3.2</td><td>3.20</td><td>-</td><td>Monitoring Bore</td></tr>
<tr><td>GW054663</td><td>398 m NNW</td><td>1.60</td><td>1.6 – 4.0</td><td>-</td><td>-</td><td>Domestic</td></tr>
</table>
During the contamination investigation, groundwater was observed within the boreholes generally around 1.2 – 1.7 mbgl.
Based on the information available for the groundwater wells outside the site, regional groundwater within the Site would be expected to be between 1.2 m bgl and 5 m bgl with potential for perched groundwater across the site.
Given that the Site is located within a region serviced by a reticulated water supply, it is considered unlikely that the groundwater beneath the Site would be utilised for drinking water purposes.</td></tr>
</table>

3. Site history

The following section outlines the results of the site history review undertaken as part of the Phase 1 Contamination Assessment (GHD 2020).

3.1 Site history

The following reports relating to contamination at the site were provided by PON:

- Hazmat Services Pty Ltd (2017a) – Asbestos Inspection, Risk Assessment and Asbestos Remediation Plan, N2305_ASB_INSP_REP_R0_061017, 11 October 2017
- Hazmat Services Pty Ltd (2017b) – Asbestos Clearances, N2305_CLR_R0_191217, 19 December 2017
- Hazmat Services Pty Ltd (2017c) – Contamination Assessment and Preliminary Waste Classification, N2386_SCA_R0_131217, December 2017
- Hazmat Services Pty Ltd (2018a) – Asbestos Remediation Plan – Sub-floor and Surface Soils, N230502_ARP_R0_080218, 8 February 2018

It is noted that a previous intrusive soil assessment was undertaken on the western portion of the site; however the results of this report were not provided to GHD. GHD therefore undertook further intrusive works on the western portion of the site as a part of this DSI.

Summaries of these reports are presented below.

3.1.1 Hazmat Services Pty Ltd (2017a) – Asbestos Inspection, Risk Assessment and Asbestos Remediation Plan, N2305_ASB_INSP_REP_R0_061017, 11 October 2017

On 6 October 2017 Hazmat Services were engaged by Integrated Construction Equipment (ICE) to complete a pre demolition asbestos inspection and risk assessment of the site. The purpose of the inspection was to identify the presence of asbestos containing materials (ACM) at the site and to gather information to develop an Asbestos Remediation Plan for the safe removal of the ACM.

The site comprised a Western Building at 46 Fitzroy Street and an Eastern Building at 65 Denison Street. At the time of the inspection, the asbestos cement sheet roofing from the Eastern Building was partially removed and the internal components of the building were partially demolished. The Western Building was being prepared for demolition. During the preparation works, the demolition contractor ICE suspected ACM was identified and as such an asbestos inspection was requested.

Nine samples of suspected ACM fragments and dust were collected from the site and submitted to Australian Safer Environment and Technology Pty Ltd, a NATA accredited laboratory for analysis. Two of the four samples collected from the Eastern Building returned positive results for asbestos, whilst four of the five samples collected from the Western Building reported positive results for asbestos. Laboratory analysis and the visual inspection revealed the following:

Eastern Building

- Settled dust located on the horizontal surfaces on the eastern side of the building was found to contain chrysotile and amosite fibres.
- Loose asbestos fibres detected in settled dust was likely to be related to existing fibre cement roofing which was historically uncovered on the underside.

- The historical build up of settled dust to horizontal surfaces including wall frames, lighting, floors and other internal fixtures and fittings should be considered ACM containing.

Western Building

- Fragments of ACM debris containing chrysotile and amosite asbestos were sighted to the floor near the centre counter area of the building.
- Loose chrysotile fibres were detected in settled dust to the floor in areas where water had ponded as a result of water leaks through the roof.
- Historical build up of settled dust observed to horizontal surfaces including the wall frames, lighting, floors and other internal fixtures and fittings was found to contain loose chrysotile fibres.

The following recommendations were made:

- Restrict access to impacted areas until asbestos removal clearances are provided.
- A class A licensed Asbestos Removal Contractor should be engaged to remove the ACM.
- All drains at ground level and guttering that may be affected by the work within the asbestos work areas to be covered with filter material capable of filtering particles down to 5 µm.
- Air monitoring must be undertaken during asbestos removal work by a licensed asbestos assessor.
- Eastern Building specific recommendations:
  - Roof sheeting, all demolished building materials, SMF insulation to internal ceilings and walls as asbestos contaminated waste to be removed.
  - A detailed environmental clean should be undertaken on all remaining surfaces using vacuum cleaning and wet wiping techniques.
  - Any salvageable items and building materials are to be cleaned prior to removal from the asbestos work area.
  - Unsalvageable items to be removed as asbestos waste.
- Western Building specific recommendations:
  - SMF insulation to internal ceilings and ACM walls to be removed.
  - A detailed environmental clean should be undertaken on all remaining surfaces using vacuum cleaning and wet wiping techniques.
  - Any salvageable items and building materials are to be cleaned prior to removal from the asbestos work area.
  - Unsalvageable items to be removed as asbestos waste.
- Asbestos waste to be disposed of at an approved waste collection facility and disposal dockets kept.
- Visual clearance inspection, surface settled dust validation sampling and air monitoring to be undertaken following the removal works in alignment with the asbestos remediation plan. Following the completion of this, demolition works could commence.

3.1.2 Hazmat Services Pty Ltd (2017b) – Asbestos Clearances, N2305_CLR_R0_191217, 19 December 2017

Following the initial inspection and risk assessment undertaken in October 2017, Hazmat Services were engaged to provide an asbestos clearance for the asbestos removal works undertaken on the Eastern and Western Buildings at the site.

Control air monitoring was undertaken at the boundaries of the asbestos work area during the original asbestos roofing removal from 26 September to 4 October 2017 as well as during additional removal works from 24 October to 19 December 2017. The results of the monitoring all fell below the limit of detection of <0.01 fibres/mL, indicating that the asbestos controls were adequate and asbestos control measures were effective throughout the project. In addition to the air monitoring, visual inspection were completed on 1, 4, 5 and 15 December 2017 to assess whether all visible and accessible ACM had been removed to a satisfactory standard in accordance with the Code of Practice and the "Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC:3003 (2005)]." It was found that no visible asbestos containing dust or debris was visible within the asbestos work area. ACM stormwater pipes remained embedded in the concrete floor of the eastern building, but was set to be removed at a later stage of demolition. Settled dust validation sampling was conducted on 5 December 2017. Twelve settled dust samples were collected and submitted to a NATA accredited laboratory. All samples returned negative results for asbestos. Following these clearance and validation works, the asbestos work area was liberally sprayed with a PVA based stabilizing solution and the area was deemed fit for re-use. Clearance air monitoring was not undertaken.

3.1.3 Hazmat Services Pty Ltd (2017c) – Contamination Assessment and Preliminary Waste Classification, N2386_SCA_R0_131217, December 2017

Hazmat Services Pty Ltd were engaged by Port of Newcastle to undertake a contamination assessment and preliminary waste classification at the site. A desktop study was conducted followed by soil and asbestos sampling on 13 December 2017.

During the desktop study, the site was identified as a former clothing warehouse and results facility that was used for warehousing prior to this. The topography of the site was relatively flat, likely due to the presence of surface fill across the site. It was anticipated that surface water would either accumulate in pools on site or flow via drainage channels towards Fitzroy St and then towards Throsby Creek, west of the site. Groundwater beneath the site was anticipated to be present in an unconfined aquifer within alluvial sands at depths shallower than 5 m below grounds surface (m bgs), flowing west towards Throsby Creek which flows into the Hunter River. The major potential contaminating activities were identified as importation of fill of unknown origin across the entire site and contamination due to settled dust and fragments from the warehouses themselves.

Following the desktop study, soil, settled dust and ACM fragment samples were collected and submitted to SGS Australia, a NATA accredited laboratory. Eight hand auger soil samples from 0.0-0.2 mbgs, eight settled dust and six ACM samples were collected and analysed for PAH, TRH, BTEX, OCP and PCB and asbestos. One soil sample was analysed for TCLP –lead and TCLP – BaP. Asbestos in fragment or fibre form were identified in six of the eight soil samples. Zinc was recorded about the adopted NEPM EIL in one soil sample, whilst concentrations of other contaminations were reported below the adopted guidelines. Chrysotile asbestos fibres were detected in two settled dust samples. The Waste Classification results indicated that the soil onsite was considered General Solid Waste.

Hazmat Services Pty Ltd made the following conclusions and recommendations:

- Surface and shallow soils across the warehouse footprints were contaminated with asbestos and heavy metals (zinc).
- The asbestos on site would meet the 'friable' definition as defined in the NSW Work Health and Safety Regulation 2017.
- The contaminated soils did not appear isolated and therefore the entire warehouse building footprints would need to be considered to be impacted with asbestos and zinc.
- Proposed soil contamination remediation options presented were 'excavation and offsite disposal' and 'capping contaminated soils in-situ'.
- Due to the presence of asbestos in settled dust, it was recommended that the entire quantity of settled dust underneath the suspended floor should be considered to be asbestos containing. Timber beams and structures underneath the floor should be decontaminated or removed from site with a Licensed Asbestos Assessor completing air monitoring during the removal process and issuing a clearance report following the remediation works.
- With regards to the preliminary waste classification, the soils across the warehouse footprint to a nominal depth of 0.2 mbgs are preliminarily classified as General Solid Waste to be managed as Special (Asbestos) Waste. If soils are to be removed from site, they would need to be disposed of at a licensed facility.

3.1.4 Hazmat Services Pty Ltd (2018a) – Asbestos Remediation Plan – Sub-floor and Surface Soils, N230502_ARP_R0_080218, 8 February 2018

On 13 October 2017, Hazmat Services Pty Ltd completed a Contamination Assessment and Preliminary Waste Classification at the site. The Asbestos Remediation Plan – Sub Floor and Surface Soils report was developed to provide recommendations for asbestos remediation works associated with the subfloor area of the warehouse buildings. In the previous Contamination Assessment, Hazmat Services Pty Ltd proposed two remediation options – the first being excavation and offsite disposal of impacted material whilst the second was on site capping of impacted material. Regardless of the option, short term asbestos remediation works were required to enable the safe demolition of the remaining components of the warehouse.

Following these works, an Asbestos Remediation Plan was issued by Hazmat Services Pty Ltd for the demolition contractor ICE to work in alignment with. In addition to the plan, a further two controls were recommended in this 2018 document:

- The asbestos contaminated soils removed by machinery are to be placed directly into trucks or bins that are double lined with 0.2 mm impervious plastic. Care is to be taken and water spray applied to avoid the generation of dust when placing the material into the track or bins. When filled, the trucks or bins are to be sealed using 0.2 mm impervious plastic and tape prior to transport from the site for disposal as asbestos waste.
- Mobile plant and machinery used in the asbestos work area are to be throughout decontaminated and surface swab validation sampling and analysis is to be undertaken with negative results for asbestos returned before removal from the site.

3.1.5 GHD (2020), Contamination Site Assessment – Lot 33 DP 107910, Port of Newcastle Operations Pty Ltd, June 2020

GHD was engaged by Port of Newcastle (PON) to undertake a Phase 1 Contamination Site Assessment (CSA) for 46 Fitzroy Street, Carrington, NSW.

Based on the desktop assessment and site inspection the overall likelihood for significant contamination to be present within the site was considered low, however there is the potential for chemical and ACM contamination associated with:

- Historical filling on the site including reclaimed sediments, imported fill, ballast and waste slag
- Historical use of herbicides or pesticides across the site as part of property maintenance
- Spillage or leakage of oils, fuels, herbicides or pesticides potentially stored on site
- Potential spills or leaks of oils or fuels from manufacturing machinery or vehicles previously used on site
- Potential for hazardous building materials to be present from previously demolished buildings
- Migration of off-site groundwater contamination into the site

While there was considered to be a low potential for contamination to be present on the site, previous investigations were limited to shallow surface soils that were only analysed for PAH, TRH, BTEX, OCP and PCB and asbestos. GHD recommended a detailed contamination site investigation for the site to provide PON a higher level of confidence in the contamination status of the site.

3.2 Historical aerial photograph review

Historical aerial photographs of the site and surrounding areas were obtained for 1954, 1966, 1975, 1981, 1993, 2001, 2005, 2006, 2009, 2011, 2014, 2017 and 2018. These photographs were reviewed, along with an aerial photograph from Six Maps (NSW Government, http://maps.six.nsw.gov.au/) accessed on 01 March 2021. Results of the historical aerial photograph review are summarised in Table 3-1and the photographs are presented in Appendix B.

Table 3-1 Review of historical aerial photographs

Photograph	Site Observation
1954 Newcastle Run: 4N Type: B&W NSW 252-5056	Whilst the photograph quality was poor, there appeared to be a series of shed-like structures that covered the entirety of the Site and the immediate surrounds. To the south and south east, ship loading facilities were visible. Industrial structures are visible to the west of the Site.
1966 Newcastle Run: 4N Type: B & W NSW 1464-5213	Photograph quality was poor; however, the shed-like structures were still visible on the Site. Some further development has occurred to the north of the site, beyond Cowper St. Additional ship loading facilities appeared to the south and east along the Hunter River.
1975 Newcastle Run: 7 Type: B & W NSW 2314-133	There appeared to be one large shed constructed on the Site as opposed to several structures the featured in previous photographs, however overall the Site remains relatively similar. Further development appeared to have occurred in all directions surrounding the site, including the ship loading facilities to the south and east.

Photograph	Site Observation
1981 Newcastle Run: 45 Type: Colour NSW 2929 Scale : 1:25,000	The Site appeared to be relatively unchanged from the previous photograph.
1987 Newcastle BHP Engineering Photograph Type: Colour Image ID: 191	There were two distinct shed structures on this Site. The Thales building to the south of the Site also appeared to consist of two shed structures. The commercial/industrial dwellings to the west of the Site have further developed, with more structures present than in the previous photographs. Lots 20 and 21 remain unchanged since the previous photograph.
1993 Newcastle Run: 11 Type: Colour NSW 4116 Scale: 1:25,000	The Site remained relatively unchanged from the previous photograph. Some additional commercial and residential development occurred to the north and east of the Site.
2001 Newcastle Run: 11 Type: Colour NSW 4534 Scale: 1:25,000	The western portion of the Site was not present in this photograph; however, the western portion of the Site remained relatively unchanged from previous photographs. To the south of the Site, increased development occurred within the PON land, including the ship loading facilities.
2005 (Google Earth view, accessed 24/04/2020)	Two distinct warehouse buildings have been constructed. What appeared to be a customer car park was visible on the Denison Street side of the lot. A small, elongated structure appeared in the south west corner of the site. To the north, the residential areas as well as Connelly Park and Pat Jordon Oval appeared to be well established. Industrial/commercial sheds and warehouses were now visible to the immediate north, west and south of the site, with additional port facilities located further south
2006- (Google Earth view, accessed 24/04/2020)	The site and surrounding areas remained relatively unchanged.
2009 (Google Earth view, accessed 24/04/2020)	The site and surrounding areas remained relatively unchanged.
2011 (Google Earth view, accessed 24/04/2020)	The site and surrounding areas remained relatively unchanged.
2014 (Google Earth view, accessed 24/04/2020)	The far north eastern corner of the lot appeared to now be grassed, whilst some vegetation between the northern boundary of the site and Hi Vis Group site had been removed. The surrounding areas remained relatively unchanged, with the exception of the construction of a shed adjacent to the wharf south west of the site, south of the current RPS building.

Photograph	Site Observation
April 2017 (Google Earth view, accessed 24/04/2020)	There appeared to be panels removed from the roof of the Western Warehouse. Additional vegetation from the northern site boundary had been removed. A small structure immediately north of the site's north eastern corner had been removed. The shed noted in 2014 to the south west of the Site had now been removed. A small extension had been made to the southern portion of the wharf, located west of the Site. A series of building materials and debris previously stockpiled to the south west of the Site, adjacent the Thales building had now been removed. Within this vicinity to the west of the Thales building, a small vertically orientated shed had also been demolished.
December 2017 (Google Earth view, accessed 24/04/2020)	Demolition of the Eastern Warehouse had commenced, with the roof appearing to have been removed, but formwork and the concrete slab still visible. Grass from the far north eastern corner of the lot had also been removed. Some minor alterations to the wharf located to the south west of the Site had occurred, with some additional areas cut out from the existing wharf. Small non-permanent structures had been removed from the northern carpark/lay down area of the Hi Vis Group site.
January 2018 (Google Earth view, accessed 24/04/2020)	Both the Eastern and Western Warehouses have been demolished. The Western structure has been completely removed, with only grass and bare soil remaining. The Hi Vis Group building had extended north into the previously cleared lay down area. Some previously removed areas of the wharf to the south west of the site have now been reinstated.

Based on the review of historical aerial photographs, it appeared that the Site was reclaimed prior to 1954 and was predominantly used for warehousing and commercial facilities prior to the demolition of onsite infrastructure. The surrounding areas had been utilised for commercial, industrial and residential purposes from the 1950s onwards. Whilst minor changes occurred to the nearby wharf to the west and surrounding commercial buildings, there had been no major changes to areas immediately surrounding the Site visible from the aerial photographs.

The aerial photo review and site inspection as part of the DSI confirmed that there were no additional disturbed areas or likely source areas apart from those identified in the preliminary CSI (GHD 2020).

3.3 NSW EPA records

As part of this DSI, GHD reviewed datasets maintained by the NSW EPA including notices under the *Contaminated Land Management Act 1997* and POEO Environment Protection License Register. Results are summarised in the following sections.

3.3.1 Contaminated sites register

A site will be on the Contaminated Land: Record of Notices only if the EPA has issued a regulatory notice in relation to the site under the *Contaminated Land Management Act* 1997.

GHD undertook a search of the register as part of this DSI. No contaminated lands records were listed for or around the site at this time.

3.3.2 List of NSW contaminated sites notified to EPA

The sites appearing on the NSW EPA 'List of NSW contaminated sites notified to the EPA' indicate that the notifiers consider that the sites are contaminated and warrant reporting to EPA. However, the contamination may or may not be significant enough to warrant regulation by the EPA. The EPA needs to review information before it can decide as to whether the site warrants regulation.

A search of the list of NSW contaminated sites notified to the EPA which was current as of 01 March 2021, revealed the following notified contaminated sites:

- Carrington redevelopment site, 11 Howden Street, Carrington (located approximately 600 m north of the site). The EPA has completed an assessment of the contamination and decided that regulation under the CLM Act is not required.
- Commercial Metals Company (CMC) Australia Pty Ltd, 117 – 121 Bourke Street, Carrington (located approximately 800 m north east of the site). The EPA has completed an assessment of the contamination and decided that regulation under the CLM Act is not required.
- Forgacs Dockyard, 81 Denison Street, Carrington (located approximately 280 m south of the site). The EPA has completed an assessment of the contamination and decided that regulation under the CLM Act is not required.
- NAT vacant land, Bourke Street, Carrington (north east of the site). The EPA has completed an assessment of the contamination and decided that regulation under the CLM Act is not required.
- Carrington Coal Tar Pavements, Bourke Street to Dyke Road, Carrington (located in excess of 500 m north east of the site). The EPA has completed an assessment of the contamination and decided that regulation under the CLM Act is not required.
- Pasminco Ship Loader, Dyke Berth 2 (off Bourke Street, to the east of the site). The EPA has completed an assessment of the contamination and decided that regulation under the CLM Act is not required.
- Dyke Point Containment Cell, Dyke Road (east of the site). The EPA has complete an assessment of this site and decided that regulation under the CLM Act is not required.

3.3.3 Environment protection license register

GHD undertook a search of the listing as part of this DSI. The search identified the following licences within a one km radius of the site.

- Licence Number.20484 Eastern Basin Pty Ltd. Off Bourke St, Carrington. (located approximately 530m east of site) s.58 licence variation
- Licence Number 20116 Newcastle Agri Terminal Pty Ltd,38 Robertson St, Carrington (located approximately 620m north-east of the site) s.58 licence variation/POEO licence
- Licence Number 20997 Aero Logistics Pty Ltd. 45 Fitzroy St, Carrington (located approximately 18 m west of the site). POEO Licence
- Licence Number 6609 Azzura Marine (Newcastle) Pty Ltd 50 Fitzroy St Carrington (the next lot over, immediately south of the site) s.58 licence variation
- Licence Number 1296 GrainCorp Operations Ltd 150 Denison St Carrington (located approximately 185m southeast of site) s.58 licence variation
- Licence Number 12147 Juice Terminals Pty Ltd. Off Denison Street, Carrington (located approximately 22m east of site) s.58 licence variation/ POEO licence
- Licence Number 10772 Newcastle Port Corporation Dyke point, Carrington (located approximately 877m southeast of site) POEO licence/s.58 licence variation
- Licence Number 21004 Thales Australia Ltd. 50 Fitzroy St, Carrington (the next lot over, immediately south of the site) POEO licence

The search also identified previous, surrendered, or refused licences:

- Alara Logistics Pty Ltd. Cnr Cowper and Bourke St (located approximately 520 m east of site) s.55 licence refusal
- Donau Pty Ltd 81 Denison St, Carrington (located approximately 139 m south of site) surrendered licences as of 2014 and 2016 respectively
- MTX Australia Pty Ltd, Surrendered licences as of 2011
- Port of Newcastle Operations Pty Ltd. Off Bourke St, Carrington (located approximately 530m east of site) Licences surrendered as of 2014

4. Preliminary Conceptual site model

Based on the results of the desktop assessment (GHD 2020) including review of historical information, the Site was built upon reclaimed land where ballast and waste slag is thought to have been used as the fill material. From the 1990s onwards, the site has had a variety of commercial uses including a surf shop, clothing manufacturing and retail facility and surfboard manufacturing facility. The former warehouses where these activities took place were demolished in late 2017, where the site has remained vacant.

Previous soil investigations have identified zinc concentrations in one sample in excess of the EILs for commercial/industrial land use. Asbestos fibres and fragments were detected in soil and dust samples collected from the site. Soil was previously classified as General Soil Waste to be managed as Special (Asbestos) Waste on the Western Warehouse footprint, whilst areas outside of the footprint were classified as General Solid Waste. It is understood that a RAP was prepared for the Site, however, it is unclear if remediation works were undertaken.

Based on the results of the desktop assessment and site inspection undertaken, the potential contamination sources are considered to be associated with the following:

- Historical filling on the site including reclaimed sediments, imported fill, ballast and waste slag
- Historical use of herbicides or pesticides across the site as part of property maintenance
- Spillage or leakage of oils, fuels, herbicides or pesticides potentially stored on site
- Potential spills or leaks of oils or fuels from manufacturing machinery or vehicles previously used on site
- Potential for hazardous building materials to be present from previously demolished buildings
- Migration of off-site groundwater contamination into the site

4.1 Contaminants of potential concern

Table 4-1 summarises the potential areas of environmental concern based on the results of the desk-top review and site inspection.

Table 4-1 Outcomes of desktop review – Potential areas of environmental concern

Description	Rationale/detail	Potential contamination
Historical filling of the Site	Fill materials from unknown sources, ballast, reclaimed sediments and waste slag	TRH, PAHs, heavy metals, OCPs, OPPs, PCBs and asbestos.
Historical storage and use of chemicals on the Site	Storage and use/spillage or leakage of chemicals associated with the former textile and screen-printing business	TRH, BTEXN, PAHs, PCBs, asbestos, heavy metals. Per- and poly-fluoroalkyl substances (PFAS)
Historical use of oils and fuels	Potential spills or leaks of oils or fuels from manufacturing machinery or vehicles previously used on site	TRH, BTEXN, PAHs, heavy metals
Site maintenance.	Historical use of herbicides or pesticides across the Site as part of maintenance	Arsenic, OCPs and OPPs.

Description	Rationale/detail	Potential contamination
Buildings and sheds	Hazardous building materials such as asbestos, lead paint and synthetic mineral fibres	Asbestos, lead and PCBs
Migration of off-site groundwater contamination	Migration of off-site groundwater contamination onto the Site	TRH, BTEXN, PAHs, heavy metals, OCPs and OPPs.

4.2 Migration pathways of off-site groundwater contamination into the site

- Soils across the site which are expected to generally consist of fill consisting of gravelly sands, sands, gravels, clayey sands. As such, there is the potential migration of surface impacts into subsurface soils. Contaminants may also be mobilised through windborne dust or may be transported via surface water flow.
- Surface water on the site. Any surface runoff generated on the site is expected to either infiltrate into subsurface soils or run off to the south and east towards the Hunter River or the west into Throsby Creek.
- Groundwater beneath the site. Groundwater is expected to be shallow (less than 5 m bgl) with the potential for perched groundwater to be evident on the site and as such there is a potential for the penetration of surface impacts into the underlying groundwater aquifer beneath the site.
- Inhalation of fibres from asbestos containing materials (ACM) (if present) and other hazardous building materials (synthetic mineral fibres).

4.3 Receptors

The following potential sensitive human and environmental receptors of contamination were identified for the site and surrounding areas:

Human health receptors

- Current and future occupants of the site (e.g. workers and subcontractors)
- Visitors to the site (e.g. workers conducting maintenance, members of the public)
- Current and future occupants of surrounding properties (e.g. workers and visitors)

Environmental receptors

- Flora and fauna within the site and surrounding land
- Hunter River to the south and east of the site
- Throsby Creek to the west of the site
- Local drainage channels and surface water
- Groundwater beneath the site

5. Data quality objectives

The Data Quality Objectives (DQOs) for the investigation**s** are based on guidance presented in:

- NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Amended Measure (NEPM) No. 1 – Schedule B2, Site Characterisation

The DQOs establish a framework for contamination investigations, which incorporates a seven stepped continuum that defines the problem at the site. A series of stages then optimises the design of the investigation. An overview of the DQOs for the investigation are presented in Table 5-1.

Table 5-1 Data quality objectives

Step	Description
1 – State the problem to be resolved	The Site has been proposed for development options including an on-ground carpark and light industrial or commercial buildings between one and four storeys. Based on the historical site use and filling at the site, there is a potential for contamination to be present that may impact the site's suitability for commercial/industrial land use and/or may have an adverse impact on the environment. The objectives of the DSI were to assess if the site is, or can be made suitable for the proposed commercial/industrial land use. A secondary objective is to provide a waste classification of the soil material across the Site that may be excavated and removed offsite during development, in accordance with the NSW EPA Waste Classification Guidelines (2014).
2 - Identify the decision/s to be made	To address the problem set out in Step 1, the following decisions are required to achieve the task objective and to identify data gaps and additional information that may be required: • Do the concentrations of contaminants in the samples collected exceed adopted guideline criteria? • Do the results of the sampling and analysis indicate there is a potential risk to human health and ecological receptors on-site and off-site? • What is the waste classification of soil on Site that will potentially be excavated and remove off-site?
3 - Identify the inputs to the decision	To inform the decisions and identify key data gaps and needs, the following information is considered necessary: • Information gained from previous reports and sampling events • Site walkover observations • Quantitative data gained via intrusive soil sampling and analytical works • Current assessment criteria
4 - Define the boundaries of the study	The spatial boundaries for the investigation area are identified as the lateral extent of the sampling locations as shown in Figure 2 (Appendix A).
5 - Develop a decision rule	Project analytical data were compared to the adopted human health and ecological criteria for soil. If a result exceeds the adopted criteria, then additional assessment, remediation and/or management may be required. If the adopted criteria are not exceeded, then the site would be considered suitable for its intended land use, with the limitations of the investigation taken into consideration.

Step	Description
6 - Specify the tolerable limits on decision errors	A detailed assessment of potential for sampling and measurement errors were undertaken based on investigation scope, methodology and results. Data quality will be assessed as detailed in Schedules B2 and B3 of the NEPM (2013). Implications for data quality with respect to the task objective will be identified and discussed. Two types of decision errors are possible: • The site (or areas of the site) may be considered 'uncontaminated' when in fact it is contaminated. • The site (or areas of the site) may be considered 'contaminated' when in fact it is not contaminated. The implications of the first decision error were considered less acceptable than the second, as the first error could involve unacceptable risk to health and/or the environment, and potentially future costs including possible litigation if the site is found to be unsuitable in the future. The risks associated with the second error are primarily limited to unwarranted remediation costs. The limits on the first decision error were therefore addressed by use of conservative investigation criteria (which incorporate a factor of safety) and by analysing any data exceeding these criteria on the basis of the 95% upper confidence level (UCL) of the average concentrations. In accordance with the NEPM, secondary criteria apply as follows: • The standard deviation of the results should be less than 50% of the relevant investigation or screening level. • No single value should exceed 250 % of the relevant investigation or screening level. The risk of the second decision error occurring was minimised by reducing the potential for unrepresentative data which could arise from the following causes: • Sampling errors which occur when the sampling program does not adequately detect the variability of a contaminant from point to point across the site, (i.e. the samples collected are not representative of the site conditions). • Measurement errors which occur during sample collection, handling preparation, analysis and data reduction. To minimise the potential for unrepresentative data, the Data Quality Indicators (DQIs) provided in Appendix E were evaluated.
7 - Optimise the design for obtaining the data	To optimise the design of the investigations, a sampling and analytical program has been prepared, as outlined in this report. Works were completed in accordance with NSW EPA guidelines and accepted industry standards. To optimise the design of the investigations a sampling and analytical program was prepared to meet the project objectives.

6. Basis for contamination assessment

6.1 Relevant guidelines

The framework for the contamination assessment made herein, was developed with reference to relevant guidelines including:

- *Contaminated Sites: Sampling Design Guidelines* (EPA, 1995)
- *Consultants Reporting on Contaminated Land, Contaminated Land Guidelines* (EPA, 2020)
- *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme* (3rd edition), (EPA NSW, 2017)
- CRC Care (2011) Health Screening Levels for petroleum hydrocarbons in soil and groundwater. Technical report series No. 10. Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care). Friebel, E. and Nadebaum, P. 2011
- CRC Care (2017) *Technical Report 39, Risk-Based Management and Remediation Guidance for Benzo(a)Pyrene*, (CRC Care, 2017)
- *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*, (EPA NSW, 2015)
- *National Environment Protection (Assessment of Site Contamination) Measure 1999* as amended 2013 (NEPC 2013)
- *NSW EPA (2014), Waste Classification Guidelines: Part 1: Classifying Waste*
- *PFAS National Environmental Management Plan 2.0,* Heads of EPAs Australia and New Zealand, dated January 2020 (HEPA 2020)

6.2 Assessment criteria - soils

The *National Environment Protection (Assessment of Site Contamination) Measure 1999* (referred to herein as the NEPM) was produced by the federal National Environmental Protection Council (NEPC) in 1999 and has been revised and updated in 2013 by way of the *National Environmental Protection (Assessment of site Contamination) Amendment Measure 2013 (NEPC 2013)*.

The NEPM includes a range of ecological investigation and screening levels, health investigation levels and health screening levels for a range of contaminants and for a range of land use and exposure scenarios. The selection of the assessment criteria has been based on the following site specific characteristics:

- The future land use for the Site is proposed for commercial/industrial land use.
- Subsurface generally comprised of sand and silty clays (fill and natural).
- There is a potential for direct contact within contaminated soils.
- There is a potential for vapour intrusion from hydrocarbon contamination.
- There is a potential for ecological impacts from contaminated soils.

6.2.1 Health based criteria

Health investigation levels have been developed for a broad range of metals and organic substances and are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types. Site specific conditions determine the depth to which HILs apply for land uses other than residential (generally to depth of 3 m).

Given that the end use for the site is for Commercial/Industrial land use, the following assessment criteria, which are sourced from Schedule B1 of the NEPM, have been considered:

- HIL (D) – Health Investigation Levels for Commercial/Industrial purposes, herein referred to as HIL D
- Health Screening Levels for Vapour Intrusion – HSL D for sand soils
- Management Limits for TRH Fractions in Soil – Residential/Parkland/Open space (fine textured soil)
- CRC CARE (2011) – Soil direct contact (intrusive maintenance workers)

No single summary statistic will fully characterise a site and appropriate consideration of relevant statistical measurements should be used in the data evaluation process and iterative development of the CSM.

Where assessment criteria are exceeded, the preferred approach is to examine a range of summary statistics including the contaminant range, median, arithmetic/geometric mean, standard deviation and 95 % upper confidence limit (UCL).

At the very least, the maximum and the 95 % UCL of the arithmetic mean contaminant concentration should be compared to the relevant Tier 1 screening criteria. However, where there is sufficient data available, and it is appropriate for the exposure being evaluated, the arithmetic mean (or geometric mean in cases where the data is log normally distributed) should also be compared to the relevant Tier 1 investigation or screening level. The implications of localised elevated values (hotspots) should also be considered. The results should also meet the following criteria:

- The standard deviation of the results should be less than 50% of the relevant investigation or screening level.
- No single value should exceed 250 % of the relevant investigation or screening level.

Statistical assessment were based on sample populations from similar soil profiles (e.g. fill material will be not be assessed with samples of underlying natural soils), and if appropriate, for similar or localised areas of the site (i.e. expected to be subject to the same impact).

In statistical assessments, only one result was used per sample ID, with the greater of the primary or duplicate sample used where applicable. Where the analytical result is less than the laboratory LOR, the LOR was used for the statistical assessment.

6.2.2 Ecological investigation levels and ecological screening levels

Ecological investigation levels (EILs) have been developed for selected metals and organic substances and are applicable for assessing risk to terrestrial ecosystems. EILs depend on land use scenarios and generally apply to the top 2 m of soil. EILs have been derived for As, Cu, Cr III, DDT, naphthalene, Ni, Pb and Zn. EILs have been developed for three generic land use settings including Areas of ecological significance, Urban residential areas and public open space, and Commercial and industrial land uses.

Ecological Screening Levels (ESLs) have been developed for selected petroleum hydrocarbon compounds and total recoverable hydrocarbon (TRH) fractions and are applicable for assessing risk to terrestrial ecosystems. ESLs also depend on land use scenarios (identical to EILs) and broadly apply to coarse- and fine-grained soils and various land uses. They are generally applicable to the top 2 m of soil.

Given the historic use of most of the site, and that the DSI is focused on developing the site for a commercial/industrial end use, the assessment criteria that has been considered is:

- Ecological Investigation Levels for Commercial/Industrial
- Ecological Screening Levels for Commercial/Industrial (coarse soil textures apply)

Where exceedances of the NEPM ESL for benzo(a)pyrene have occurred, these values have then been compared to the CRC Care 2017 Technical Report 39 ecological criteria. CRC Care 2017 states that the NEPM ESL criteria is classified as low reliability as they were based on the Canadian soil quality guidelines. Criteria from Technical Report 39 is classified as a higher reliability ecological guideline for Australian ecosystems.

6.2.3 Aesthetics

Assessment of aesthetic issues was undertaken as outlined in Schedule B(1) of the NEPM (1999) which states that 'there are no specific numeric aesthetic guidelines, however site assessment requires balanced consideration of the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity'.

General assessment considerations include:

- That chemically discoloured soils or large quantities of various types of inert refuse, particularly if unsightly, may cause ongoing concern to site users.
- The depth of the materials, including chemical residues, in relation to the final surface of the site.
- The need for, and practicality of, any long-term management of foreign material.

The NEPM notes that in some cases, documentation of the nature and distribution of the foreign material may be sufficient to address concerns relating to potential land use restrictions.

6.3 Waste classification criteria

An in-situ waste classification was undertaken for soils that may require offsite disposal as part of development. Soils were classified using the Waste Classification Guidelines, Part 1: Classifying Waste (EPA 2014). In accordance with EPA 2014, the following classification principles apply:

- 'Special waste' is a class of waste that has unique regulatory requirements. The potential environmental impacts of special waste need to be managed to minimise the risk of harm to the environment and human health. Special wastes are:
  - Clinical and related waste
  - Asbestos waste
  - Waste tyres
  - Anything classified as special waste under an EPA gazettal notice.
- Is the waste liquid waste?
- Is the waste pre-classified? Waste can be pre-classified as:
  - Hazardous Waste
  - Restricted Solid Waste
  - General Solid Waste (putrescible)

  - General Solid Waste (non-putrescible)
- Does the waste possess hazardous characteristics?
- Determine the waste's classification using chemical assessment.

The waste classification criteria for assessment of soil contamination are provided in Table C in Appendix D**.**

6.4 PFAS Assessment criteria

The assessment levels adopted for PFAS are based upon the Heads of Environmental Protection Authorities Australia and New Zealand (2020) PFAS National Environmental Management Plan 2.0 (HEPA 2020). This guideline presents a consolidated set of Australian PFAS assessment levels for soil and water that are derived from the following guidelines:

- Canadian Government (2017). Canadian Environmental Protection Act, 1999. Federal Environmental Quality Guidelines, Perfluorooctane Sulfonate (PFOS), February 2017.
- Department of Environment and Energy (2016) Draft Commonwealth Environmental Management Guidance on Perfluorooctane (PFOS) and Perfluorooctanoic Acid (PFOA). October 2016 (DoEE 2016) (Draft).
- Department of Health (2017) Health Based Guidance Values for PFAS for use in Site Investigations in Australia (DoH 2017).
- Food Standards Australia New Zealand (2017) Hazard assessment report - Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA), Perfluorohexane Sulfonate (PFHxS) (FSANZ 2017).

It is noted that the exposure settings are based on those presented in the NEPM, with the selected assessment criteria are presented in Table 6-1.

Table 6-1 PFAS screening levels

Exposure scenario	PFOS + PFHxS	PFOS	PFOA	Use
Human health screening values	20 mg/kg	-	50 mg/kg	Commercial / Industrial
Ecological direct exposure		1 mg/kg	10 mg/kg	All land uses
Ecological indirect exposure	-	0.01 mg/kg	-	All land uses

6.5 Selected criteria

The methodology used when assessing contamination levels in soils during the DSI was to use the EILs/ESLs, HILs/HSLs and aesthetic considerations as cut off points to classify soils either as:

- Soils not contaminated, which pose no risk to the environment or human health and warrant no further action, i.e. concentrations less than or equal to the EILs/ESLs with no evidence of unacceptable aesthetic impacts.
- Soils containing elevated concentrations of contaminants, which may pose a risk to the environment (in particular plant species or soil organisms) but pose no risk to human health under the proposed land use scenarios i.e. concentrations greater than the ecological values and less than the adopted HILs/HSLs. A qualitative risk assessment may be

sufficient to evaluate the potential impact for the proposed land use. Aesthetic impacts would also be taken into account.

- Soils significantly contaminated which pose a risk to both the environment and human health, i.e. concentrations significantly greater than relevant investigation or screening levels. Soils in this category would likely require site-specific health and/or ecological risk assessment (Tier 2 or 3) carried out as appropriate for the proposed land use. This will usually require the collection of additional site data. Alternatively, a conservative management approach may be adopted, depending on the likely cost effectiveness of further assessment when compared with the cost of conservative management.

7. Sampling and analysis plan

7.1 Rationale

Sample locations consisted of grid sampling to provide spatial coverage across the site. Based on the eastern and western portions of the site being approximately 8,680 m^2, Table A Minimum Sampling Points Required for Site Characterisation based on Detecting Circular Hot Spots by using a Systematic Sampling Pattern" from NSW EPA (1995) recommends a total of nineteen (19) sample locations for areas 0.8 hectares. Sampling was undertaking in a grid pattern and sampling locations are presented in Figure 3, Appendix A.

There are no NSW guidelines for determining the minimum number of samples for in-situ waste classification. However, the NSW EPA ENM Order 2014 states that for in-situ material, for a site of this size (approximately 8,680 $m^{2)}$, a minimum number of 19 samples is required with one sample to be collected for every metre excavated. The Order presents a maximum average concentration and absolute maximum concentration for a range of chemicals. We have applied the ENM Order 2014 for the purpose of characterisation.

The sampling and analysis plan is presented in Table 7-1.

Table 7-1 Sampling plan

Area	Number of Sample Locations	Analytical Parameters	Number of analyses [1]
Lot 33 DP 1078910 – eastern portion	9	Heavy metals [2] TRH/BTEXN/PAH OCPs and PCBs [3] PFAS Asbestos (presence/absence in soil)	20 20 3 4 10 4
Lot 33 DP 1078910 – western portion	10	Heavy metals[2] TRH/BTEXN/PAH OCP/PCBs[3] Asbestos PFAS	22 22 3 4 4

1.Includes duplicate sample analysis at a rate of 1 per 10 samples

2 Arsenic, cadmium, total chromium, copper, lead, mercury, nickel and zinc

3 Based on all samples being analysed as three or four-part composites

7.2 Sampling methodology

Works were conducted in accordance with GHD's standard operating procedures for field works.

A summary of the sampling and analysis works completed as part of this DSI are provided in the following sections. The summary relates to the investigations conducted in February 2021.

Table 7-2 Soil sampling methodology

Item	Description
Date of fieldwork	11 – 12 February 2021
Work clearance	JSEA including daily pre-work assessment and hazard identification
Technical guideline	National Uniform Drillers Licensing Committee (2020) Minimum Construction Requirements for Water Bores in Australia (Edition 4, 2020). NSW EPA (1995), *Sampling Design Guidelines.* NSW EPA ENM Order (2014)
Ground clearance	Prior to intrusive works, underground service plans from Dial Before You Dig (DBYD) were obtained to identify the approximate location of underground services. An accredited and qualified underground service locator was used to clear each sampling location and areas within the immediate vicinity of each location using underground service detection equipment.
Bore logging	The soil profile was described in accordance with the Unified Soil Classification System (USCS) and GHD's standard logging procedures, with features such as seepage, discolouration, staining, odours and other indications of contamination being noted on the borehole log, as well as soil sampling information. All field observations and subsurface conditions were recorded on lithological logs (Appendix E).
Field screening	Field screening for volatiles was undertaken prior to collection of soil samples for laboratory analysis using a photo-ionisation detector (PID) and results included in Appendix E. PID calibration data is presented in Appendix H.
Soil sampling	Discrete soil samples were collected throughout the soil profiles and placed into laboratory supplied jars. A push tube method was used to drill to a maximum depth of 2.1 mbgl. Boreholes on the eastern site were concrete cored and drilled below the concrete. The concrete slab was reinstated following sample collection. Samples for PID screening were collected in separate zip lock bags.
Number of soil samples and laboratory analysis	See Table 7-1 for sampling plan. Duplicate analysis samples sets (field duplicates) were also collected and analysed at a rate of 1 in 5 samples for QA/QC purposes. Soil samples were submitted to a NATA accredited laboratory Eurofins MGT (primary laboratory) for the analytical suite presented above.
Sample handling and transport	Following collection, soil samples were immediately placed into laboratory supplied sampling jars which were placed into an esky prior to being forwarded to the analytical laboratory within the specified holding times along with a chain of custody (COC) form (Appendix G). It is noted that any samples to be collected for analysis of PFAS were collected in laboratory supplied Teflon free jars.

8. Results

This section presents the results of all sediment and soil investigations undertaken on the site by GHD in February 2021.

Analytical results and field parameters are summarised in the following tables in Appendix D:

- Table A1: Soil analytical results
- Table A2: Soil analytical results – OCPs/PCBs
- Table B: Soil analytical results - PFAS
- Table C: In-situ waste classification
- Table D: QA/QC Results

Detailed laboratory reports are presented in Appendix G.

8.1 Quality assurance and quality control

An evaluation of the field and laboratory data quality was undertaken in accordance with the NEPM 2013 '*Schedule B2, Assessment of data quality,'* and is included in Appendix F.

Four field duplicates were collected and analysed at the primary laboratory. The relative percentage differences between the samples of the duplicate pair. RPDs were generally within acceptable limits, with the following exceptions:

BH07_0.0-0.1/FD02 – Lead RPD 36%, Zinc RPD 103%

BH13_0.5-0.6/FD03 – Lead RPD 34%, Zinc RPD 43%

BH17_0.3-0.4/FD04 – Lead RPD 51%

RPD exceedances were marginal and attributed to sample heterogeneity. No rinsate data was collected as no piece of re-usable sampling equipment came into contact with the samples. Trip spike and blank samples were also analysed. The results of these were within the acceptable limits.

In summary, the review of the QA/QC program indicates that the soil analytical data are of an acceptable quality upon which to draw meaningful conclusions regarding impacts to soil at the site.

8.2 Soil description

Soils encountered during the investigation are described in Table 8-1 below and soil logs are presented in Appendix E. Photographs of the soil material are presented in Appendix B.

Table 8-1 Generalised lithology

Depth (mbgl)	Generalised Lithology
Eastern site	
0 – 0.13	CONCRETE
0.13 – 1.0/1.5	FILL (consisting of Clayey SAND, CLAY, SILT with coarse gravel and SAND)
1.0/1.5 – 2.0	SAND, medium to coarse, well-graded, rounded, yellow/grey, shells/Silty SAND, fine, dark grey
Western site	
0 – 1.1/1.3	FILL (consisting of gravelly SILT, clayey SILT)

Depth (mbgl)	Generalised Lithology
1.1/1.3 – 1.6/1.7	CLAY/Silty CLAY, low to medium plasticity, black
1.6/1.7– 2.1	SAND, fine to medium grained, yellow/grey to black

Exceptions to the above were as follows:

- BH07 (eastern portion) where fill materials were not observed. SAND was observed throughout the borehole with some layers of silty CLAY (1.0 – 1.3 mbgl and 2.3 – 2.9 mbgl).
- BH18 (western portion) – The borehole was terminated at 0.4 mbgl due to refusal.
- BH19 (western portion) – Dark grey CLAY was reported from 1.8 – 2.1 mbgl.

In addition, a weak organic odour was reported at BH10_1.3-1.4 and a weak hydrogen sulphide odour was reported at BH16 from 1.7 mbgl. Some brick fragments and polystyrene/glass were reported in the fill materials across the site.

8.3 Aesthetic Impacts

Aesthetic impacts were not observed in the fill materials across the site. Brick fragments and polystyrene/glass and a weak organic odour and weak hydrogen sulphide odour were reported at BH10 and BH16 (western portion); however these are not considered to pose an aesthetic impact based on the commercial/industrial nature of the proposed land use. The odours did not correlate with any soil exceedances at BH10 and BH16.

8.4 Human Health Exceedances

Soil results were below the adopted human health assessment criteria for commercial/industrial land use across both portions of the Site. Soil was analysed for presence/absence of asbestos at seven locations. No asbestos was identified in soil across the site.

8.5 Ecological Exceedances

Several ecological exceedances were reported across the site. These are summarised in Table 8-2.

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Table 8-2 Summary of Exceedances

Analyte	Criterion (mg/kg)	No. of primary samples	Minimum (mg/kg)	Maximum (mg/kg)	Reported Exceedances (eastern portion)	Reported exceedances (western portion)
Arsenic	NEPM 2013 EIL - Commercial/Industrial: 160	**38**	<2	700	BH04_0.3-0.4 (700 mg/kg)	No exceedances
Copper	NEPM 2013 EIL - Commercial/Industrial: 85 NEPM 2013 HIL D: 240,000	38	<5	1,900	BH03_0.0-0.1 (91 mg/kg) BH04_0.3-0.4 (1,900 mg/kg)	BH17_1.0-1.1 (410 mg/kg)
Nickel	NEPM 2013 EIL - Commercial/Industrial: 55 NEPM 2013 HIL D: 6,000	38	<5	56	BH04_0.3-0.4 (56 mg/kg)	No exceedances
Zinc	NEPM 2013 EIL - Commercial/Industrial: 110 NEPM 2013 HIL D: 400,000	38	<5	18,000	BH03_0.0-0.1 (950 mg/kg) BH04_0.3-0.4 (18,000 mg/kg) BH09_0.3-0.4 (180 mg/kg)	BH10_1.3-1.4 (130 mg/kg) BH12_0.0-0.1 (140 mg/kg) BH14_0.0-0.1 (160 mg/kg) BH15_0.0-0.1 (150 mg/kg) BH17_1.0-1.1 (280 mg/kg)
TRH F2	NEPM 2013 ESL – Commercial / Industrial: 170 mg/kg Management Limits: 1,000 mg/kg	38	<50	316.4	BH04_0.3-0.4 (316.4 mg/kg)	BH16_0.0-0.1 (<250 mg/kg) BH17_1.0-1.1 (<250 mg/kg)
Benzo(a)Pyrene	NEPM 2013 ESL – Commercial / Industrial: 0.7 mg/kg CRC Care 2017 Technical Report 39 for B(a)P: 172 mg/kg	38	<0.5	2.3	No exceedances	BH11_0.0-0.1 (2.3 mg/kg) BH12_0.0-0.1 (1.0 mg/kg) BH17_1.0-1.1 (1.1 mg/kg)

8.5.1 TRH

TRH concentrations in soil were generally below the laboratory LOR and/or nominated assessment criteria with the exception of the following:

- TRH F2 concentrations at BH04_0.3-0.4 (316.4 mg/kg) which exceeded the NEPM ESL for commercial/industrial.
- It is noted that the laboratory LOR was raised in samples BH16_0.0-0.1 and BH18_0.0-0.1 on the western portion to levels above the TRH F2 ESL criteria for commercial/industrial (250 mg/kg). As such, these are considered to be exceedances.

8.5.2 PAH

Concentrations of PAHs were generally low or below the laboratory LOR with the exception of the following:

- Concentrations of Benzo(a)pyrene in BH11_0.0-0.1 (2.3 mg/kg), BH12_0.0-0.1 (1.0 mg/kg) and BH17_1.0-1.1 (1.1 mg/kg) exceeded the ecological screening level (0.7 mg/kg).

8.5.3 PFAS

Concentrations of PFAS were all below the laboratory LOR.

8.6 In-situ waste classification

An in-situ waste classification was undertaken for the site and the report is provided in Appendix I. Based on the results of the laboratory analyses and in accordance with the NSW EPA (2014) *Waste Classification Guidelines,* the waste classification for the soil assessed from the excavated soils associated within the site are generally **General Solid Waste (GSW).** There was a hotspot of contaminants in the location of BH04, where soil is classified as **Hazardous Waste (HW).**

It is therefore considered that soils excavated on the western portion of the site can therefore be disposed of as GSW, however excavations around BH04 (extending mid-way between the nearest sampling points) may require further waste classification prior to disposal due to the hotspot identified at BH04.

9. Discussion

9.1 Summary of results

Soils encountered during the investigation were described as fill materials underlain by sands and silty clays. A concrete slab was still evident on the eastern portion (generally 0.13 m in thickness). Some brick fragments and glass/polystyrene were observed across the site. No hydrocarbon odours or staining were observed, however a weak organic odour was reported at BH10_1.3-1.4 and a hydrogen sulphide odour was reported at BH16 from 1.6 mbgl.

9.1.1 Human health risks

Soil results were below the adopted human health assessment criteria for commercial/industrial land use across both portions of the Site. It is therefore considered that the risk to human health during construction and use for commercial/industrial land use is considered low and no further investigations are required.

It is noted that while asbestos was not identified during this assessment and an asbestos clearance has been provided by HAZMAT in December 2017, unexpected finds of asbestos may still occur during development. It is recommended that management plans for any future construction works include an unexpected finds protocol for asbestos.

9.1.2 Ecological risks

Concentrations of heavy metals (arsenic, copper, nickel and zinc) exceeded the ecological criteria in several locations, particularly on the eastern portion of the site. Ecological exceedances were also reported for TRH F2 at BH04_0.3-0.4 and benzo(a)pyrene at BH11_0.0-0.1, BH12_0.0-0.1 and BH17_1.0-1.1. In addition, the laboratory LOR was raised in samples BH16_0.0-0.1 and BH18_0.0-0.1 on the western portion to levels above the ESL criteria and were considered exceedances.

95% Upper Confidence Limit (UCL) calculations were undertaken for arsenic, lead, nickel and benzo(a)pyrene and outputs are presented in Appendix J. All UCL calculations were below the ecological guideline. It is noted that a hotspot was identified on the eastern portion of the site at BH04_0.3-0.4 with heavy metals (arsenic, copper, nickel and zinc) exceeding the EILs by greater than 250% of the assessment criteria, and therefore ineligible for statistical analysis. All concentrations in the deeper sample analysed at this location (BH04_1.0-1.1) were below the assessment criteria indicating that hotspot contamination is limited to the upper 0.5 m.

As the NEPM ESL is considered a low reliability value for benzo(a)pyrene, the exceedances at BH11, BH12 and BH17 were also compared against the CRC Care 2017 Technical Report 39 guidelines. All concentrations were below the high reliability value indicating that concentrations of benzo(a)pyrene in soil are not considered to be an ecological risk at this site.

The hotspot identified around BH04 on the eastern portion of the Site (with exceedances of arsenic, copper, nickel zinc and TRH F2) is not considered to be an issue given the commercial/industrial land use proposed for the Site. However, it should be considered during future landscaping for sensitive plant species. In addition, soils excavated from this area should not be stockpiled near waterways or sensitive areas. This should be incorporated into a construction management plan for the Site.

The ecological risks observed across the site were generally minor and below the 95% UCL and not considered to present unacceptable ecological risks at the site. The heavy metals identified at the site are considered typical of soils in the Carrington region and likely attributed to industrial activities that have taken place in the surrounding area. Further, site specific EILs were not calculated as pH and CEC analysis was not undertaken and, as such, it is noted that the ecological criteria used in this assessment is conservative. Further investigations are therefore not considered to be required.

10. Updated conceptual site model

In consideration of the preliminary CSM outlined in Section 4 and based on the results of the DSI, an assessment of complete and/or potential pathways between known sources and identified receptors is detailed below in Table 10-1.

Table 10-1 Conceptual site model – Source Pathway Receptor assessment

Source	Pathway	Receptors	SPR linkage complete or potentially complete?
Contaminated soils resulting from former site activities and fill from unknown sources	Direct contact, ingestion and dermal exposure with contaminated soil	Maintenance works, consultants undertaking investigations Future land use - construction workers, commercial / industrial occupants and visitors.	No – No significant contamination was identified with soil results below the nominated HIL/HSL.
		Off-site commercial / industrial receptors	No – No significant contamination was identified with soil results below the nominated HIL/HSL.
		Ecological receptors	Unlikely – while there were some exceedances of the EILs/ESLs, ecological risks observed across the site were generally minor. Most contaminants identified at the site are immobile and unlikely to migrate. The exception to this was the hotspot at BH04 (eastern portion) in which the SPR linkage is potentially complete. This would need to be considered in a management plan for the Site.
	Volatilisation and subsequent inhalation	Maintenance works, consultants undertaking investigations Future land use - construction workers, commercial / industrial occupants and visitors.	No–No- no volatile TRH or BTEXN reported on site and all soil results were below the adopted HSLs for petroleum hydrocarbon vapour intrusion risks.
	Vertical migration of contaminants to groundwater	Groundwater	Unlikely - Whilst groundwater was not included in the scope of this investigation, the impacts to the soil across the site were generally limited to the top fill materials, which were generally to 0.5 mbgl.

Based on the assessment of source pathway receptor linkages in Table 10-1, there are no possible or potentially complete linkages between identified contamination and identified receptors at the site with the exception of risks to ecological receptors from the hotspot on the eastern portion of the site (BH04). Given the proposed commercial/industrial land use, it is unlikely that ecological receptors will be impacted; however it should be considered during future landscaping for sensitive plant species.

11. Conclusions and recommendations

These conclusions and recommendations present a brief summary of the information described in this report and should be read in the context of the more detailed information presented in the body of this report, the scope of the investigations and the limitations discussed in Section 13.

11.1 Conclusions

Following detailed review of previous and current investigations, the conclusions from the DSI are summarised as follows:

- The aerial photo review and site inspection confirmed that there were no additional disturbed areas or likely source areas apart from those identified in the preliminary CSI (GHD 2020).
- Fill materials were generally observed in the top 1.0 metres to 1.2 metres below ground level and were underlain by sands and silty clays.
- Aesthetic impacts were not observed in the fill materials across the site. Brick fragments and polystyrene/glass and a weak organic odour and weak hydrogen sulphide odour were reported at BH10 and BH16 (western portion); however these are not considered to pose an aesthetic impact based on the commercial/industrial nature of the proposed land use. The odours did not correlate with any soil exceedances at BH10 and BH16.
- Soil results were below the adopted human health assessment criteria for commercial/industrial land use across both portions of the site. It is therefore considered that there are no vapour intrusion risks to human health are present at the site and no further soil or groundwater assessment is required.
- Concentrations of heavy metals (arsenic, copper, lead, nickel and zinc) were above the ecological criteria across the site; however 95% UCL calculations were all below the guidelines indicating this is not an issue. The exception to this was a hotspot identified on the eastern portion of the site at BH04_0.3-0.4 with heavy metals (arsenic, copper, nickel and zinc) exceeding the EILs by up to more two orders of magnitude and therefore excluded in the 95% UCL calculations. All concentrations in the deeper sample analysed at this location (BH04_1.0-1.1) were below the assessment criteria indicating that contamination is limited to the upper 0.5 m. Concentrations of TRH F2 were also above the ecological criteria at BH04_0.3-0.4. The hotspot is not considered to be an issue given the commercial/industrial land use proposed for the Site. However, it should be considered during future landscaping for sensitive plant species. In addition, soils excavated from this area should not be stockpiled near waterways or sensitive areas. This should be incorporated into a construction management plan for the Site.
- Concentrations of benzo(a)pyrene exceeded the ecological criteria in some samples across the western portion of the site; however all concentrations were below the high reliability criteria from CRC Care 2017 Technical Report 39.
- In-situ waste classification classified the soils across the western portion as General Solid Waste, however excavations in the vicinity of BH04 on the eastern portion would be classified as “hazardous waste” and further sampling would be required to potentially reduce the waste classification prior to disposal.

- An updated conceptual site model was undertaken following the DSI which concluded that there are no possible or potentially complete linkages between identified contamination and identified receptors at the site. The exception to this was the risk to ecological receptors from the hotspot on the eastern portion of the site (BH04). Given the proposed commercial/industrial land use, it is unlikely that ecological receptors will be impacted; however it should be considered during future landscaping for sensitive plant species.

11.2 Recommendations

While there were some ecological exceedances reported across the site, they are generally minor and not considered to present unacceptable ecological risks at the site. The exception to this was the hotspot at BH04 on the eastern portion of the Site which should be considered during future landscaping for sensitive plant species. In addition, soils excavated from this area should not be stockpiled near waterways or sensitive areas. This should be incorporated into a construction management plan for the Site.

Further investigations at the site are not considered to be required. Based on the results, the site is considered suitable for the proposed commercial/industrial land use.

It is noted, however, that while asbestos was not identified during this assessment and an asbestos clearance has been provided by HAZMAT in December 2017, unexpected finds of asbestos may still occur during development. An unexpected finds protocol would be required during future development works.

In-situ waste classification undertaken at the site reported soils on the Site as **General Solid Waste** with the exception of soils around BH04 (on the eastern portion) which are currently classified as **Hazardous Waste** based on lead concentrations. Further sampling is recommended in this area to confirm and possibly reduce this waste classification.

12. References

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13. Limitations

This Detailed Contamination Site Assessment for 46 Fitzroy Street and 65 Denison Street, Carrington, NSW (the "Report"):

- Has been prepared by GHD Pty Ltd ("GHD") for Port of Newcastle.
- May be used and relied on by Port of Newcastle.
- May be used by and provided to the NSW EPA and the relevant planning authority for the purpose of meeting statutory obligations in accordance with the relevant sections of the CLM Act 1997 or the Environment Planning and Assessment (EP&A) Act 1979.
- Must not be used by, or relied on by any parties other than those listed above without the prior written consent of GHD and subject always to the next paragraph.
- May only be used for the purpose as stated in Section 1.2 of the Report (and must not be used for any other purpose).

GHD and its servants, employees and officers otherwise expressly disclaim responsibility to any person other than Port of Newcastle arising from or in connection with this Report.

To the maximum extent permitted by law, all implied warranties and conditions in relation to the services provided by GHD and the Report are excluded unless they are expressly stated to apply in this Report.

The services undertaken by GHD in connection with preparing this Report:

- Were limited to those specifically detailed in Section 1.3 of this Report and
- Were undertaken in accordance with current professional practice and by reference to relevant environmental regulatory authority and industry standards, guidelines and assessment criteria in existence as at the date of this Report.

The opinions, conclusions and any recommendations in this Report are based on assumptions made by GHD when undertaking the services mentioned above and preparing the Report ("Assumptions"), as specified throughout this Report.

GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with any of the Assumptions being incorrect.

Subject to the paragraphs in this section of the Report, the opinions, conclusions and any recommendations in this Report are based on conditions encountered and information reviewed at the time of preparation of this Report and are relevant until such times as the site conditions or relevant legislations changes, at which time, GHD expressly disclaims responsibility for any error in, or omission from, this Report arising from or in connection with those opinions, conclusions and any recommendations.

GHD has prepared this Report on the basis of information provided by Port of Newcastle and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked ("Unverified Information") beyond the agreed scope of work.

GHD expressly disclaims responsibility in connection with the Unverified Information, including (but not limited to) errors in, or omissions from, the Report, which were caused or contributed to by errors in, or omissions from, the Unverified Information.

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

The opinions, conclusions and any recommendations in this Report are based on information obtained from, and testing undertaken at or in connection with, specific sampling points and may not fully represent the conditions that may be encountered across the site at other than these locations. Site conditions at other parts of the site may be different from the site conditions found at the specific sampling points.

Investigations undertaken in respect of this Report were constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this Report.

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

Site conditions (including any the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD expressly disclaims responsibility:

- Arising from, or in connection with, any change to the site conditions.
- To update this Report if the site conditions change.

Except as otherwise expressly stated in this Report GHD makes no warranty or representation as to the presence or otherwise of asbestos and/or asbestos containing materials ("ACM") on the site. If fill material has been imported on to the site at any time, or if any buildings constructed prior to 1970 have been demolished on the site or material from such buildings disposed of on the site, the site may contain asbestos or ACM.

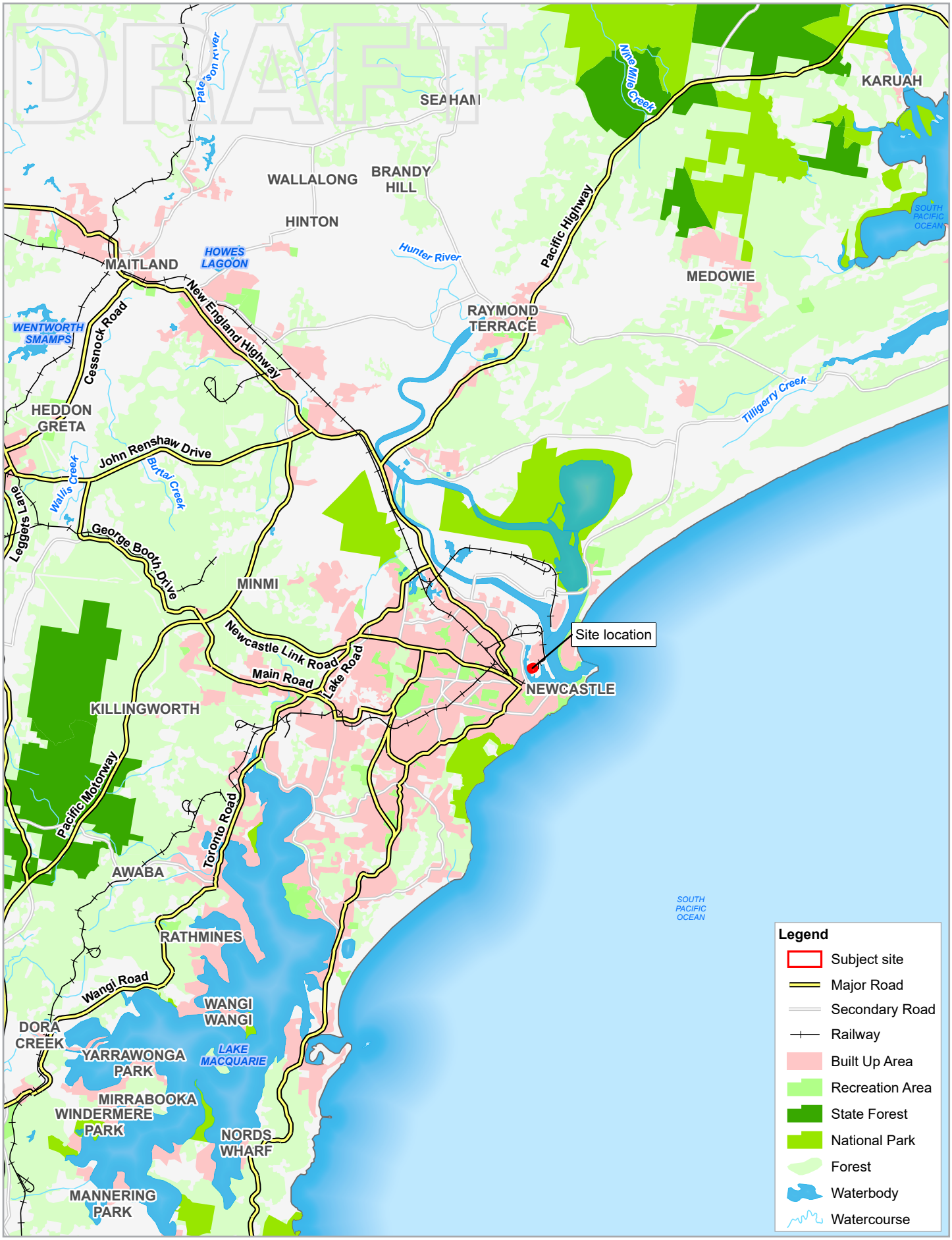
Subsurface conditions can vary across a particular site and cannot be exhaustively defined by the investigations carried out prior to this Report. As a result, it is unlikely that the results and estimations expressed or used to compile this Report will represent conditions at any location other than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

Except as otherwise expressly stated in this Report, GHD makes no warranty, statement or representation of any kind concerning the suitability of the site for any purpose or the permissibility of any use, development or re-development of the site.

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

Appendices

Appendix A – Figures



Paper Size ISO A4

0 1.5 3 4.5 6 7.5

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Port of Newcastle Operations Pty Ltd
Denison Street Development
Detailed Site Investigation

Project No. **12545790**
Revision No. **A**
Date **09/03/2021**

Site Location

FIGURE 1

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Print date: 09 Mar 2021 - 13:35

Data source: Commonwealth of Australia (Geoscience Australia): 250K Topographic Data Series 3, 2006. .
Created by: tmorton

Legend

Site Boundary

Paper Size ISO A4

0 8 16 24 32

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Port of Newcastle Operations Pty Ltd
Denison Street Development
Detailed Site Investigation

Site Plan

Project No. **12545790**
Revision No. **A**
Date **09/03/2021**

FIGURE 2

G:\22\12527619\GIS\Maps\12527619_FitzroyStMineSubsidenceAndContamination\12545790_DetailedSiteInvest_A.aprx\12545790_DSI002_SitePlan_A
Print date: 09 Mar 2021 - 14:15

Data source: LPI: DCDB/DTDB, 2017. public_NSW_Imagery: © Department of Customer Service 2020.
Created by: tmorton

Legend

- Site Boundary
- Sampling locations

Paper Size ISO A4

0 8 16 24 32

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Port of Newcastle Operations Pty Ltd
Denison Street Development
Detailed Site Investigation

Project No. **12545790**
Revision No. **A**
Date **09/03/2021**

Sample Locations

FIGURE 3

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Print date: 09 Mar 2021 - 14:14

Data source: LPI: DCDB/DTDB, 2017. public_NSW_Imagery: © Department of Customer Service 2020.
Created by: tmorton

Legend

- Site Boundary
- Sampling locations

Paper Size ISO A4

0 8 16 24 32

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Port of Newcastle Operations Pty Ltd
Denison Street Development
Detailed Site Investigation

Exceedances of Ecological Criteria

Project No. **12545790**
Revision No. **A**
Date **09/03/2021**

FIGURE 4

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Print date: 09 Mar 2021 - 14:14

Data source: LPI: DCDB/DTDB, 2017. public_NSW_Imagery: © Department of Customer Service 2020.
Created by: tmorton

Appendix B – Photograph log

Photograph 1: Site overview from north western access gate. View south west (April 2020)

Photograph 2: Northern boundary with slight slope to the north. View east. (April 2020)

Photograph 3: Interface between site and Hi Vis Group site shed. Square drainage visible in the foreground. View north west.(April 2020)

Photograph 4: Concrete slab of Eastern Warehouse. View south west. (April 2020)

Photograph 5: Fibrous lining observed between ceramic and concrete slab. (April 2020)

Photograph 6: Iron/rust staining observed in north eastern portion of slab. (April 2020)

Photograph 7: Staining of black unknown substance (foreground) in central northern portion of slab. View east. (April 2020)

Photograph 8: Surface water pooling on slab following rain event. View south. (April 2020)

Photograph 9: Southern portion of site including woodchips and brick fragments. View west.(April 2020)

Photograph 10: Example of building material fragment observed in the northern portion of the site outside of the warehouse footprints. (April 2020)

Photograph 11: View of central corridor. View north. (April 2020)

Photograph 12: Example of weathered thick textured paint on southern portion of concrete slab. View east. (April 2020)

Photograph 13: Telegraph poles in background and Western Warehouse footprint in foreground. View south. (April 2020)

Photograph 14: Western Warehouse footprint with presumed concrete former fence post footings visible in foreground. View west. (April 2020)

Photograph 14: Example of blocked square drain.

Photograph 15: Surface water pooling in the central portion of the site. View north west.

Photograph 16: Storage of Hi Vis Group materials on northern site boundary. View north. (April 2020)

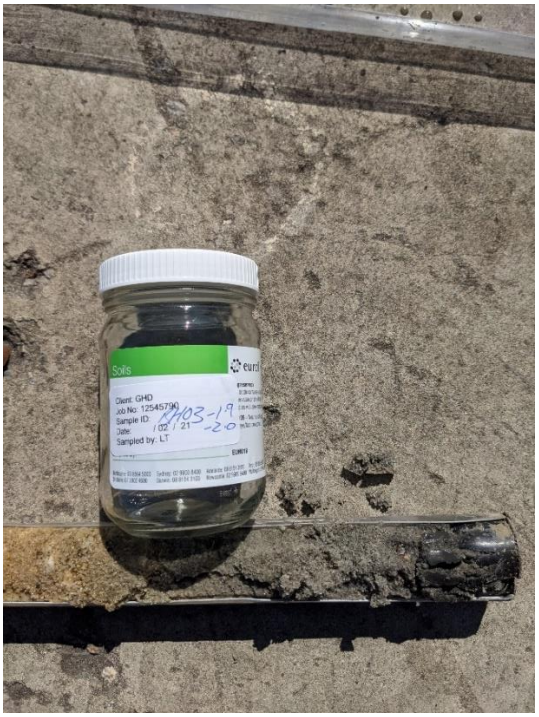
Photograph 17: Example building material fragment identified in the Western Warehouse footprint. (April 2020)

Photograph 18 - BH02 – Feb 2021

Photograph 19 - BH02 – Feb 2021

Photograph 20: BH03 (Feb 2021

Photograph 21: BH03_1.9-2.0 (Feb 2021)



Photograph 22: BH06 (Feb 2021)

Photograph 23: BH07_0.3-0.4 (Feb 2021)

Photograph 24: BH08_1.0-1.1 (Feb 2021)

Photograph 25: BH09_0.0-0.1 (Feb 2021)

Photograph 26: BH09_1.0-1.1 (Feb 2021)

Photograph 27: BH10 (Feb 2021)

Photograph 28: BH12 (Feb 2021)

Photograph 29: BH13 (Feb 2021)

Photograph 30: BH14 (Feb 2021)

Photograph 31: BH16 (Feb 2021)

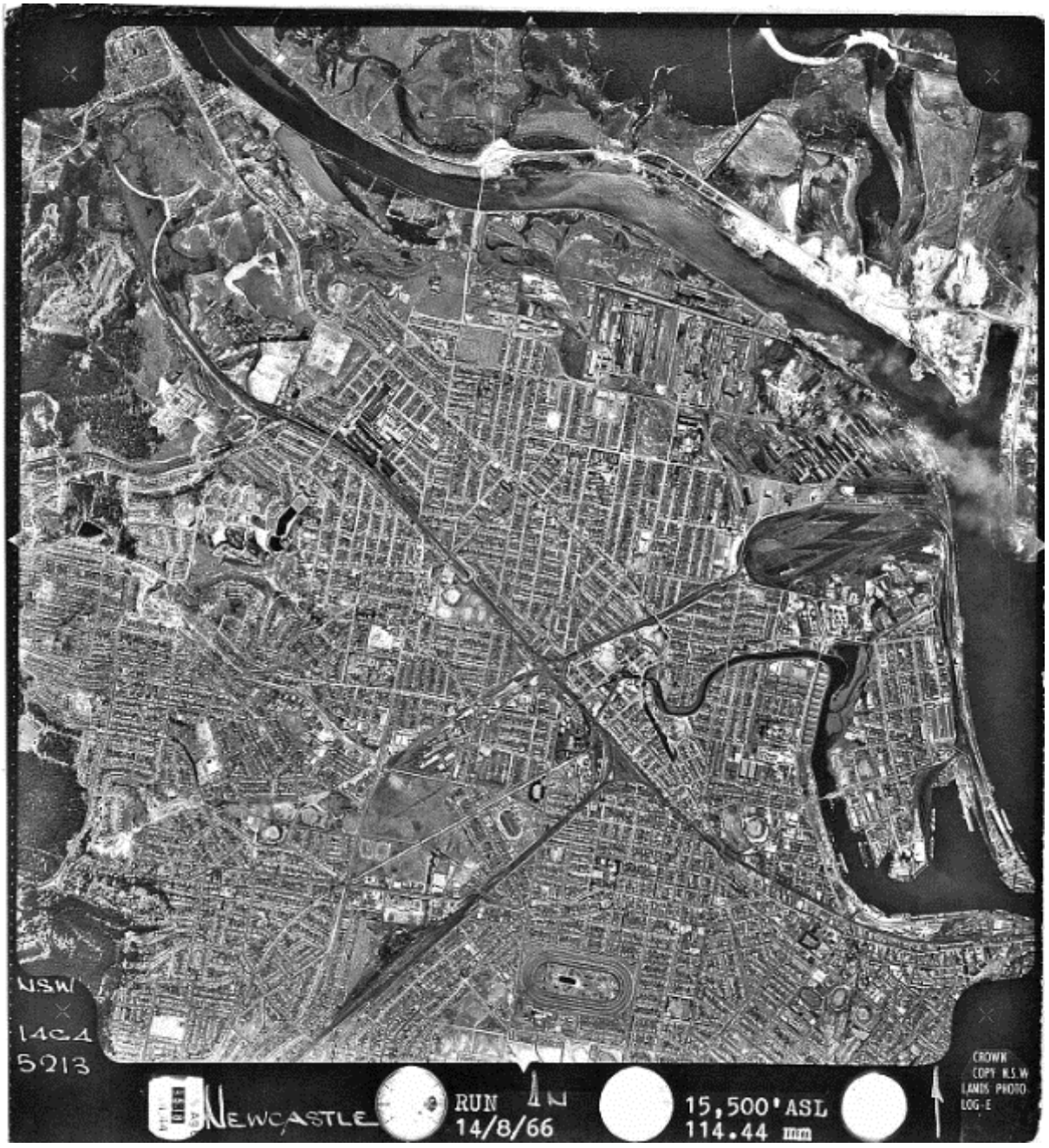
Photograph 32: BH17 (Feb 2021)

Photograph 33: BH18 (Feb 2021)

Photograph 34: BH19 (Feb 2021)

Appendix C – Aerial Photographs

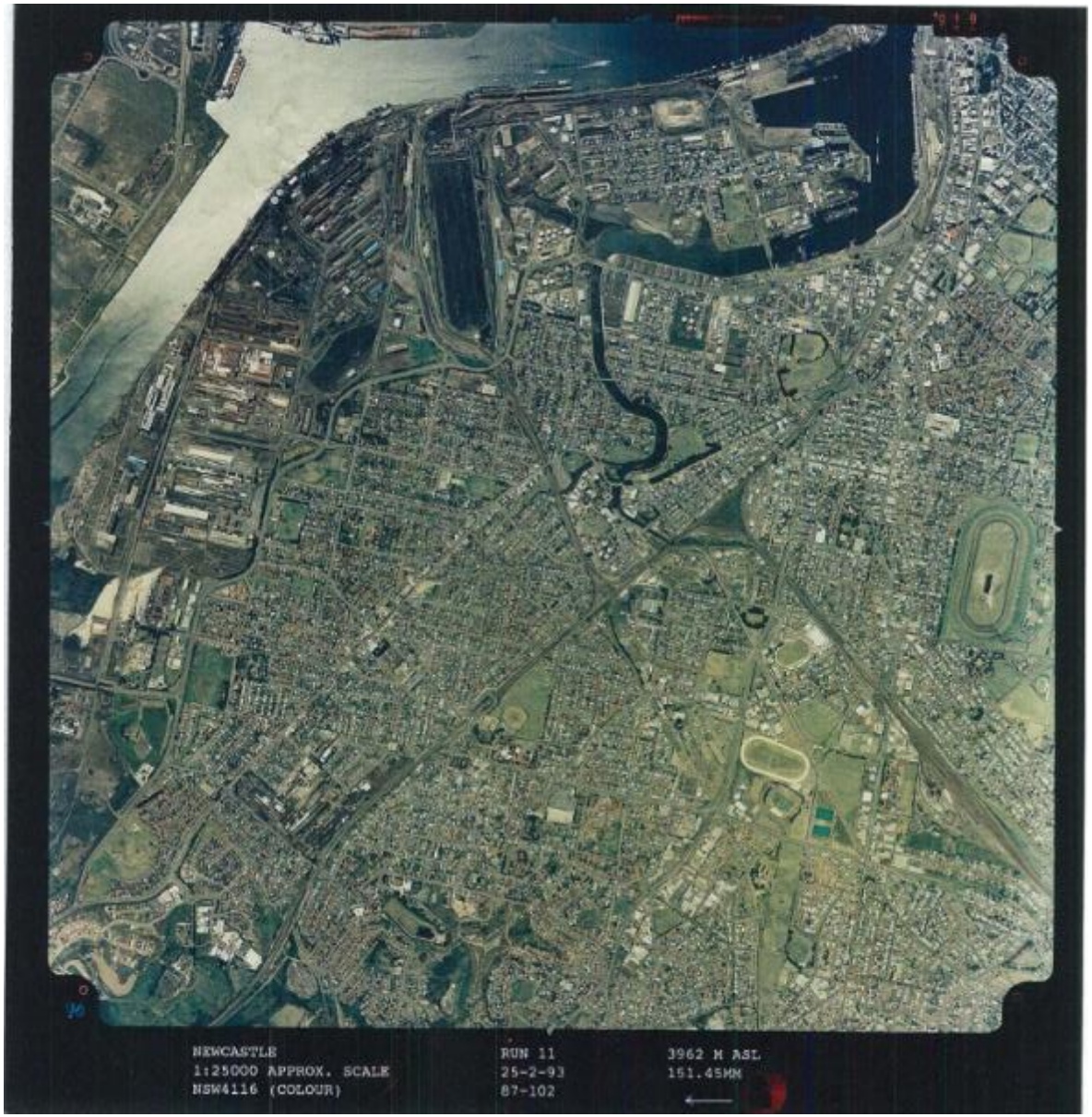

N·S·W·252 - 5056
NEWCASTLE RUN 4 N 22·7·54 LENS 26707 B 152 28 M/M 15500'
ADASTRAPHOTO
RESTRICTED

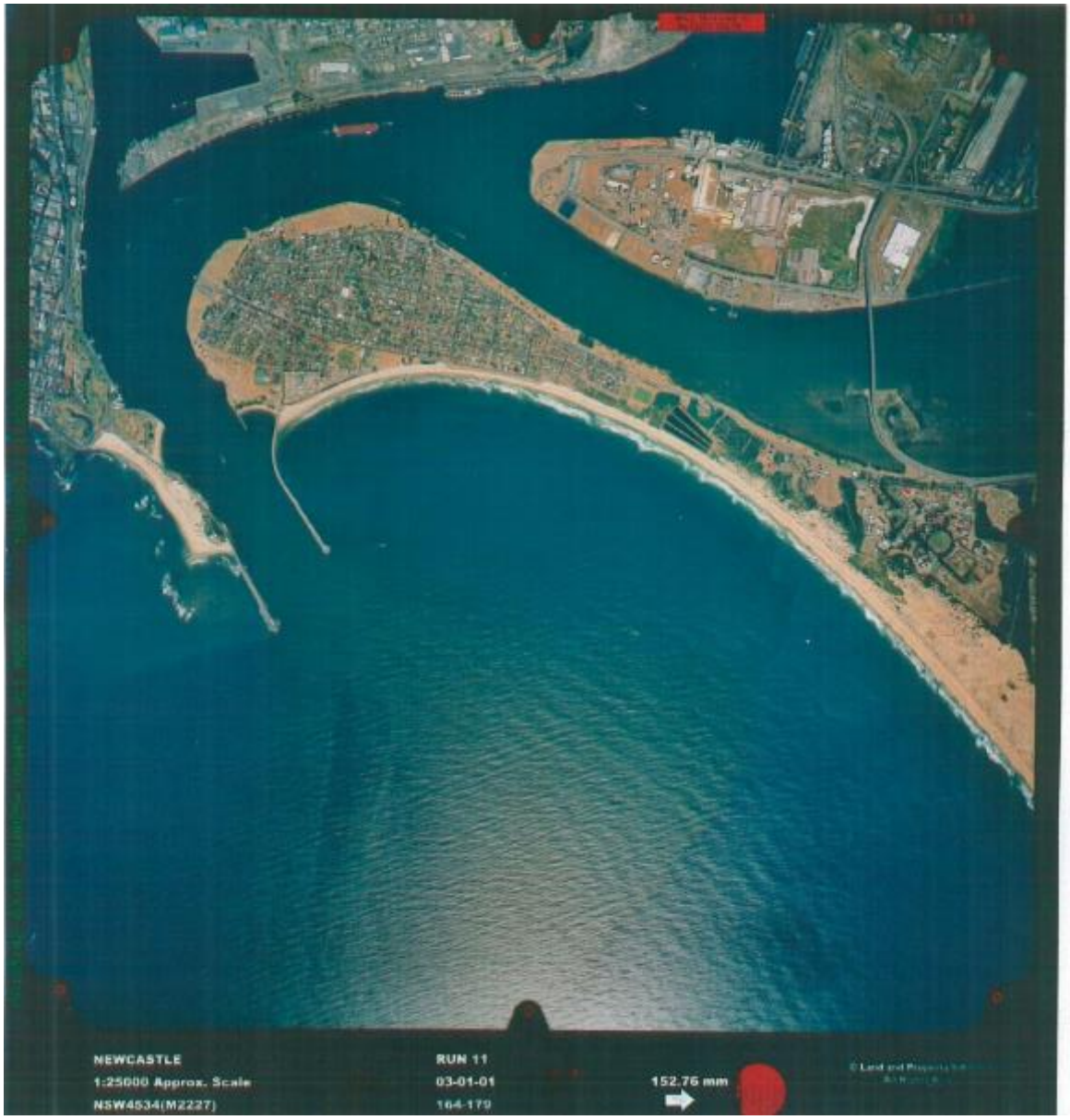

N.S.W.
14C.4
5213
NEWCASTLE
RUN 14
14/8/66
15,500' ASL
114.44 mm
CROWN COPY N.S.W. LANDS PHOTO LOG-E


NSW
2314
133
Newcastle
Run 7
27.5.75
6401M. ASL.
151.45mm

NSW COASTAL WETLANDS
1:25 000 COLOUR
(MISC. 1309) NSW 2929
RUN 45
30.6.81
3810m ASL
152.02mm
NSW
2929
QD


PROOF PRINT ONLY
BHP


NEWCASTLE
1:25000 APPROX. SCALE
NSW4116 (COLOUR)
RUN 11
25-2-93
87-102
3962 M ASL
151.45MM


NEWCASTLE
1:25000 Approx. Scale
NSW4534(M2227)
RUN 11
03-01-01
164-179
152.76 mm

Google Earth Image – 2005

Google Earth Image – 2006

Google Earth Image – 2009

Google Earth Image – 2011

Google Earth Image – 2014

Google Earth Image – April 2017

Google Earth Image – December 2017

Google Earth Image - 2018

Appendix D – Results tables

Appendix D
Table A1
Soil Analytical Results

				Inorganics	Asbestos	Metals								BTEXN						
				Moisture Content (%)	Asbestos present (yes/no)	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Naphthalene
				%	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR				1		2	0.4	5	5	5	0.1	5	5	0.1	0.1	0.1	0.1	0.2	0.3	0.5
CRC CARE 2011 Soil HSL Vap.Int Intrusive Works,0 to <2m,Sand														*77*	*NL*	*NL*			*NL*	*NL*
NEPM 2013 EIL-Commercial / Industrial 0-2m						160		310	85	1800		55	110							370
NEPM 2013 ESL-Commercial / Industrial 0-2m														75	135	165			180	
CRC Care 2017 Technical Report 39 for Benzo(a)Pyrene																				
NEPM 2013 Management Limits - Commercial/Industrial for TPH Fractions																				
NEPM 2013 Table 1A(1) HIL D Commercial/Industrial						3000	900	3600	240000	1500	730	6000	400000							
NEPM 2013 Table 1A(3) HSL D Commercial/Industrial Soil for Vapour Intrusion, Sand																				
0-1m														3	NL	NL			230	NL
1-2m														3	NL	NL			NL	NL
2-4m														3	NL	NL			NL	NL
>=4m														3	NL	NL			NL	NL
Location Code	**Date**	**Field ID**	**Depth**																	
BH01	11/02/2021	BH01_0.0-0.1	0 - 0.1	13	No	10	<0.4	23	35	41	0.1	20	60	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH01	11/02/2021	BH01_0.5-0.6	0.5 - 0.6	9.1	-	3.6	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH02	11/02/2021	BH02_0.3-0.4	0.3 - 0.4	14	-	5.0	<0.4	44	48	81	0.3	45	80	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH02	11/02/2021	BH02_1.9-2.0	1.9 - 2	23	-	6.7	<0.4	6.8	<5	<5	<0.1	5.7	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH02	11/02/2021	FD01		20	-	6.5	<0.4	8.5	<5	<5	<0.1	5.9	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH03	11/02/2021	BH03_0.0-0.1	0 - 0.1	16	-	13	2.6	22	91	330	0.2	18	950	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH03	11/02/2021	BH03_0.5-0.6	0.5 - 0.6	12	-	7.7	<0.4	54	57	59	0.2	47	86	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH04	11/02/2021	BH04_0.3-0.4	0.3 - 0.4	10	No	700	2.2	77	1,900	1,400	<0.1	56	18,000	<0.1	0.2	0.3	0.5	1.5	2.0	3.6
BH04	11/02/2021	BH04_1.0-1.1	1 - 1.1	8.0	-	3.9	<0.4	<5	<5	6.8	<0.1	<5	25	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH05	11/02/2021	BH05_0.3-0.4	0.3 - 0.4	7.3	-	4.5	<0.4	<5	<5	6.0	<0.1	<5	30	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH05	11/02/2021	BH05_1.0-1.1	1 - 1.1	26	-	8.4	<0.4	63	74	35	0.1	47	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH06	11/02/2021	BH06_0.0-0.1	0 - 0.1	27	-	4.1	<0.4	11	14	13	<0.1	8.0	42	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH06	11/02/2021	BH06_1.0-1.1	1 - 1.1	6.9	-	3.0	<0.4	<5	<5	<5	<0.1	<5	6.7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH07	11/02/2021	BH07_0.0-0.1	0 - 0.1	5.4	No	4.4	<0.4	<5	<5	7.2	<0.1	<5	25	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH07	11/02/2021	FD02		5.6	-	4.0	<0.4	<5	<5	<5	<0.1	<5	8.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH07	11/02/2021	BH07_0.5-0.6	0.5 - 0.6	6.4	-	3.5	<0.4	<5	<5	<5	<0.1	<5	5.0	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH08	11/02/2021	BH08_0.0-0.1	0 - 0.1	15	-	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH08	11/02/2021	BH08_2.0-2.1	2 - 2.1	11	-	<2	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH09	11/02/2021	BH09_0.3-0.4	0.3 - 0.4	3.3	No	11	0.5	6.9	27	63	<0.1	6.7	180	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH09	11/02/2021	BH09_1.0-1.1	1 - 1.1	7.3	-	3.2	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH10	12/02/2021	BH10_0.3-0.4	0.3 - 0.4	2.5	No	3.6	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH10	12/02/2021	BH10_1.3-1.4	1.3 - 1.4	29	-	10	<0.4	52	64	31	0.1	39	130	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH11	12/02/2021	BH11_0.0-0.1	0 - 0.1	9.4	-	5.5	<0.4	120	28	44	<0.1	10	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH11	12/02/2021	BH11_0.5-0.6	0.5 - 0.6	9.9	-	4.0	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH12	12/02/2021	BH12_0.0-0.1	0 - 0.1	7.3	-	5.8	<0.4	43	31	36	<0.1	18	140	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH13	12/02/2021	BH13_0.5-0.6	0.5 - 0.6	8.4	No	3.8	<0.4	<5	<5	10	<0.1	<5	28	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH13	12/02/2021	FD03		3.4	-	3.7	<0.4	<5	<5	7.1	<0.1	<5	18	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH13	12/02/2021	BH13_2.0-2.1	2 - 2.1	22	-	4.6	<0.4	6.3	23	29	<0.1	5.1	33	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH14	12/02/2021	BH14_0.0-0.1	0 - 0.1	8.4	-	5.6	<0.4	31	25	45	<0.1	18	160	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH14	12/02/2021	BH14_1.0-1.1	1 - 1.1	13	No	<2	<0.4	<5	<5	<5	<0.1	<5	8.8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH15	12/02/2021	BH15_0.0-0.1	0 - 0.1	9.9	-	8.0	<0.4	34	31	55	<0.1	17	150	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<2.5
BH15	12/02/2021	BH15_1.4-1.5	1.4 - 1.5	15	-	6.3	<0.4	8.8	13	13	<0.1	7.2	44	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH16	12/02/2021	BH16_0.0-0.1	0 - 0.1	9.2	-	8.1	<0.4	14	17	18	<0.1	7.2	74	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<2.5
BH16	12/02/2021	BH16_1.7-1.8	1.7 - 1.8	15	-	5.6	<0.4	8.2	63	16	<0.1	7.2	46	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<2.5
BH17	12/02/2021	BH17_0.3-0.4	0.3 - 0.4	3.6	-	4.6	<0.4	<5	20	8.3	<0.1	<5	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH17	12/02/2021	FD04		3.4	-	4.1	<0.4	<5	21	14	<0.1	<5	97	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH17	12/02/2021	BH17_1.0-1.1	1 - 1.1	14	-	7.3	0.7	20	410	140	0.4	17	280	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH18	12/02/2021	BH18_0.0-0.1	0 - 0.1	5.6	-	3.6	<0.4	33	21	21	<0.1	20	80	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<2.5
BH18	12/02/2021	BH18_0.3-0.4	0.3 - 0.4	7.3	-	3.8	<0.4	32	20	21	<0.1	26	50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH19	12/02/2021	BH19_0.3-0.4	0.3 - 0.4	4.0	-	5.4	<0.4	20	16	21	<0.1	<5	80	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5
BH19	12/02/2021	BH19_1.1-1.2	1.1 - 1.2	4.6	-	11	<0.4	<5	<5	<5	<0.1	<5	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.5

Appendix D
Table A1
Soil Analytical Results

				TRH - NEPM 2013							TRH - NEPM 1999					PAHs																		
				F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ) (half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR				20	20	50	50	100	100	100	20	20	50	50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CRC CARE 2011 Soil HSL Vap.Int Intrusive Works,0 to <2m,Sand				*NL*		*NL*																								*NL*						
NEPM 2013 EIL-Commercial / Industrial 0-2m																														370						
NEPM 2013 ESL-Commercial / Industrial 0-2m				215		170		1700	3300											0.7															
CRC Care 2017 Technical Report 39 for Benzo(a)Pyrene																				172															
NEPM 2013 Management Limits - Commercial/Industrial for TPH Fractions				**700**		**1000**		**3500**	**10000**																											
NEPM 2013 Table 1A(1) HIL D Commercial/Industrial																																	4000	40	40	40
NEPM 2013 Table 1A(3) HSL D Commercial/Industrial Soil for Vapour Intrusion, Sand																																				
0-1m				260		NL																								NL						
1-2m				370		NL																								NL						
2-4m				630		NL																								NL						
>=4m				NL		NL																								NL						
Location Code	**Date**	**Field ID**	**Depth**																																	
BH01	11/02/2021	BH01_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	61	<50	61	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	0.7	1.6	<0.5	0.6	1.2
BH01	11/02/2021	BH01_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH02	11/02/2021	BH02_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH02	11/02/2021	BH02_1.9-2.0	1.9 - 2	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH02	11/02/2021	FD01		<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH03	11/02/2021	BH03_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	64	<50	64	<0.5	<0.5	<0.5	0.6	0.7	0.8	0.6	<0.5	0.6	<0.5	1.5	<0.5	<0.5	<0.5	0.8	1.4	7	0.9	1.2	1.5
BH03	11/02/2021	BH03_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH04	11/02/2021	BH04_0.3-0.4	0.3 - 0.4	<20	<20	316.4	320	660	<100	980	<20	190	690	<50	880	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	3.9	1.5	0.5	6.6	<0.5	0.6	1.2
BH04	11/02/2021	BH04_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH05	11/02/2021	BH05_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH05	11/02/2021	BH05_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH06	11/02/2021	BH06_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH06	11/02/2021	BH06_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH07	11/02/2021	BH07_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH07	11/02/2021	FD02		<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH07	11/02/2021	BH07_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH08	11/02/2021	BH08_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH08	11/02/2021	BH08_2.0-2.1	2 - 2.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH09	11/02/2021	BH09_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<100	<100	<100	<20	<20	52	<50	52	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.7	2.1	<0.5	0.6	1.2
BH09	11/02/2021	BH09_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH10	12/02/2021	BH10_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH10	12/02/2021	BH10_1.3-1.4	1.3 - 1.4	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH11	12/02/2021	BH11_0.0-0.1	0 - 0.1	<20	<20	<50	<50	160	<100	160	<20	<20	95	<50	95	<0.5	<0.5	<0.5	2.2	2.3	2.2	2.0	1.9	1.8	<0.5	4.6	<0.5	1.5	<0.5	1.4	4.4	24.3	3.1	3.4	3.6
BH11	12/02/2021	BH11_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH12	12/02/2021	BH12_0.0-0.1	0 - 0.1	<20	<20	<50	<50	150	<100	150	<20	<20	80	<50	80	<0.5	<0.5	<0.5	0.9	1.0	0.9	0.8	0.8	0.8	<0.5	1.9	<0.5	0.7	<0.5	0.8	1.8	10.4	1.3	1.6	1.8
BH13	12/02/2021	BH13_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH13	12/02/2021	FD03		<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH13	12/02/2021	BH13_2.0-2.1	2 - 2.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH14	12/02/2021	BH14_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	0.5	0.6	0.6	<0.5	<0.5	<0.5	<0.5	1.0	<0.5	<0.5	<0.5	0.5	1.0	4.2	0.7	1.0	1.3
BH14	12/02/2021	BH14_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH15	12/02/2021	BH15_0.0-0.1	0 - 0.1	<100	<100	<50	<50	190	<100	190	<100	<20	170	<50	170	<0.5	<0.5	<0.5	<0.5	0.5	0.7	<0.5	<0.5	<0.5	<0.5	1.0	<0.5	<0.5	<0.5	<0.5	0.9	3.1	0.6	0.9	1.2
BH15	12/02/2021	BH15_1.4-1.5	1.4 - 1.5	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.0	<0.5	<0.5	<0.5	<0.5	1.0	2	<0.5	0.6	1.2
BH16	12/02/2021	BH16_0.0-0.1	0 - 0.1	<100	<100	<250	<250	<500	<500	<500	<100	<100	<250	<250	<250	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH16	12/02/2021	BH16_1.7-1.8	1.7 - 1.8	<100	<100	<50	<50	<100	<100	<100	<100	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH17	12/02/2021	BH17_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH17	12/02/2021	FD04		<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH17	12/02/2021	BH17_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	1.1	1.1	1.0	0.8	0.7	0.8	<0.5	1.6	<0.5	0.7	<0.5	0.6	1.6	10	1.5	1.7	2.0
BH18	12/02/2021	BH18_0.0-0.1	0 - 0.1	<100	<100	<250	<250	<500	<500	<500	<100	<100	<250	<250	<250	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH18	12/02/2021	BH18_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	110	<100	110	<20	<20	75	<50	75	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	3.0	6.1
BH19	12/02/2021	BH19_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2
BH19	12/02/2021	BH19_1.1-1.2	1.1 - 1.2	<20	<20	<50	<50	<100	<100	<100	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2

Appendix D
Table A2
Soil Analytical Results - OCPs, PCBs

Denison Street Development
Environmental Mine Subsidence Invest
65 Denison Street, Carrington

				OC Pesticides																										PCBs							
				Organochlorine pesticides EPAVic	Other organochlorine pesticides EPAVic	4,4'-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	4,4 DDD	4,4 DDT	DDT+DDE+DDD - Lab Calc	Dieldrin	Endosulfan I (alpha)	Endosulfan II (beta)	Endosulfan Sulfate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Total)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
LOR				0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.1	500	100	500	500	500	500	500	500
CRC CARE 2011 Soil HSL Vap.Int Intrusive Works,0 to <2m,Sand																																					
NEPM 2013 Commercial / Industrial 0-2m														640	640																						
NEPM 2013 Table 1A(1) HIL D - Commercial / Industrial									15		177				1200					33				17		27	833	53									2333
Location Code	**Date**	**Field ID**	**Samples**																																		
COMPOSITE 1	11/02/2021	COMPOSITE 1	BH01_0.0-0.1, BH02_0.0-0.1, BH03_0.0-0.1	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<500	<100	<500	<500	<500	<500	<500	<500
COMPOSITE 2	11/02/2021	COMPOSITE 2	BH04_0.3-0.4, BH05_0.3-0.4, BH06_0.0-0.1	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<500	<100	<500	<500	<500	<500	<500	<500
COMPOSITE 3	11/02/2021	COMPOSITE 3	BH07_0.0-0.1, BH08_0.0-0.1, BH09_0.3-0.4	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<500	<100	<500	<500	<500	<500	<500	<500
COMPOSITE 4	12/02/2021	COMPOSITE 4	BH10_0.3-0.4, BH11_0.0-0.1, BH12-0.0-0.1	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<500	<100	<500	<500	<500	<500	<500	<500
COMPOSITE 5	12/02/2021	COMPOSITE 5	BH13_0.5-0.6, BH17_0.3-0.4, BH18_0.3-0.4,	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<500	<100	<500	<500	<500	<500	<500	<500
COMPOSITE 6	12/02/2021	COMPOSITE 6	BH14_0.0-0.1, BH15_0.0-0.1, BH16_0.0-0.1	<0.2	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<500	<100	<500	<500	<500	<500	<500	<500

Appendix D
Table B
Soil Analytical Results - PFAS

Denison Street Development
Environmental & Mine Subsidence Invest
65 Denison Street, Carrington

				PFAS - Perfluoroalkyl Carboxylic Acids										PFAS - Perfluoroalkyl Sulfonic Acids							
				Perfluorobutanoic acid (PFBA)	Perfluoropentanoic acid (PFPeA)	Perfluorohexanoic acid (PFHxA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorononanoic acid (PFNA)	Perfluorodecanoic acid (PFDA)	Perfluoroundecanoic acid (PFUnDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluoropropanesulfonic acid (PFPrS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOS)	Perfluorononanesulfonic acid (PFNS)	Perfluorodecanesulfonic acid (PFDS)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR				0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005
PFAS NEMP 2.0 2020 Ecological Indirect Exposure All land uses																				0.01			
PFAS NEMP 2.0 2020 Ecological Direct Exposure All land uses								10												1			
PFAS NEMP 2.0 2020 Health Industrial / Commercial								***50***															
Location Code	**Date /Time**	**Field ID**	**Depth**																				
BH06	11/02/2021	BH06_2.0-2.1	2 - 2.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
BH08	11/02/2021	BH08_2.0-2.1	2 - 2.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
BH12	11/02/2021	BH12_1.0-1.1	1 - 1.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
BH19	11/02/2021	BH19_0.3-0.4	0.3 - 0.4	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005

Appendix D
Table B
Soil Analytical Results - PFAS

	PFAS - Perfluoroalkyl Sulfonamide							PFAS - Fluorotelomer Sulfonic Acids				PFAS - Sums				
	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-Methyl perfluorooctane sulfonamidoethanol (MEFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer Sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)	Sum of PFHxS and PFOS	Sum of US EPA PFAS (PFOS + PFOA)*	PFAS (Sum of Total)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	PFAS (Sum of Total)(WA DER List)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.005	0.005	0.005	0.01	0.005	0.005	0.01	0.005	0.01	0.005	0.005	0.005	0.005	0.05	0.005	0.01
PFAS NEMP 2.0 2020 Ecological Indirect Exposure All land uses																
PFAS NEMP 2.0 2020 Ecological Direct Exposure All land uses																
PFAS NEMP 2.0 2020 Health Industrial / Commercial												***20***				
Location Code	**Date /Time**	**Field ID**	**Depth**													
BH06	11/02/2021	BH06_2.0-2.1	2 - 2.1	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	<0.005	<0.05	<0.005	<0.01
BH08	11/02/2021	BH08_2.0-2.1	2 - 2.1	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	<0.005	<0.05	<0.005	<0.01
BH12	11/02/2021	BH12_1.0-1.1	1 - 1.1	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	<0.005	<0.05	<0.005	<0.01
BH19	11/02/2021	BH19_0.3-0.4	0.3 - 0.4	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.01	<0.005	<0.005	<0.005	<0.05	<0.005	<0.01

Appendix D
Table C
In-Situ Waste Classification

				Metals														BTEXN						TRH - NEPM 2013						
				Arsenic	Arsenic TCLP	Cadmium	Chromium (III+VI)	Chromium TCLP	Copper	Lead	Lead TCLP	Mercury	Nickel	Nickel TCLP	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)
				mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR				2		0.4	5		5	5		0.1	5		5	0.1	0.1	0.1	0.1	0.2	0.3	20	20	50	50	100	100	100
NSW EPA (2014) General Solid Waste CT1 (No Leaching)				100		20	100			100		4	40			10	288	600			1,000							
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)				400		80	400			400		16	160			40	1,152	2,400			4,000							
NSW EPA (2014) General Solid Waste SCC1 (Leachable Concentrations)				500	5		1900	5		1500	5		1050	2														
NSW EPA (2014) Restricted Solid Waste SCC2 (Leachable Concentrations)				2000	20		7600	20		6000	20		4200	8														
Location Code	**Date**	**Field ID**	**Depth**																										
COMPOSITE 1	11/02/2021	COMPOSITE 1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 2	11/02/2021	COMPOSITE 2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 3	11/02/2021	COMPOSITE 3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 4	12/02/2021	COMPOSITE 4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 5	12/02/2021	COMPOSITE 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 6	12/02/2021	COMPOSITE 6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01	11/02/2021	BH01_0.0-0.1	0 - 0.1	10	-	<0.4	23	-	35	41	-	0.1	20	-	60	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH01	11/02/2021	BH01_0.5-0.6	0.5 - 0.6	3.6	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH02	11/02/2021	BH02_0.3-0.4	0.3 - 0.4	5	-	<0.4	44	-	48	81	-	0.3	45	0.01	80	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH02	11/02/2021	BH02_1.9-2.0	1.9 - 2	6.7	-	<0.4	6.8	-	<5	<5	-	<0.1	5.7	-	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH02	11/02/2021	FD01		6.5	-	<0.4	8.5	-	<5	<5	-	<0.1	5.9	-	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH03	11/02/2021	BH03_0.0-0.1	0 - 0.1	13	-	2.6	22	-	91	330	<0.01	0.2	18	-	950	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH03	11/02/2021	BH03_0.5-0.6	0.5 - 0.6	7.7	-	<0.4	54	-	57	59	-	0.2	47	0.02	86	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH04	11/02/2021	BH04_0.3-0.4	0.3 - 0.4	700	-	2.2	77	-	1,900	1,400	-	<0.1	56	-	18,000	<0.1	0.2	0.3	0.5	1.5	2	<20	<20	316.4	320	660	<100	980
BH04	11/02/2021	BH04_1.0-1.1	1 - 1.1	3.9	-	<0.4	<5	-	<5	6.8	-	<0.1	<5	-	25	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH05	11/02/2021	BH05_0.3-0.4	0.3 - 0.4	4.5	-	<0.4	<5	-	<5	6	-	<0.1	<5	-	30	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH05	11/02/2021	BH05_1.0-1.1	1 - 1.1	8.4	-	<0.4	63	-	74	35	-	0.1	47	<0.01	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH06	11/02/2021	BH06_0.0-0.1	0 - 0.1	4.1	-	<0.4	11	-	14	13	-	<0.1	8	-	42	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH06	11/02/2021	BH06_1.0-1.1	1 - 1.1	3	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	6.7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH07	11/02/2021	BH07_0.0-0.1	0 - 0.1	4.4	-	<0.4	<5	-	<5	7.2	-	<0.1	<5	-	25	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH07	11/02/2021	BH07_0.5-0.6	0.5 - 0.6	3.5	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH07	11/02/2021	FD02		4	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH08	11/02/2021	BH08_0.0-0.1	0 - 0.1	<2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH08	11/02/2021	BH08_2.0-2.1	2 - 2.1	<2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH09	11/02/2021	BH09_0.3-0.4	0.3 - 0.4	11	-	0.5	6.9	-	27	63	-	<0.1	6.7	-	180	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH09	11/02/2021	BH09_1.0-1.1	1 - 1.1	3.2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH10	12/02/2021	BH10_0.3-0.4	0.3 - 0.4	3.6	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH10	12/02/2021	BH10_1.3-1.4	1.3 - 1.4	10	-	<0.4	52	-	64	31	-	0.1	39	-	130	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH11	12/02/2021	BH11_0.0-0.1	0 - 0.1	5.5	-	<0.4	120	<0.05	28	44	-	<0.1	10	-	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	160	<100	160
BH11	12/02/2021	BH11_0.5-0.6	0.5 - 0.6	4	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH12	12/02/2021	BH12_0.0-0.1	0 - 0.1	5.8	-	<0.4	43	-	31	36	-	<0.1	18	-	140	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	150	<100	150
BH13	12/02/2021	BH13_0.5-0.6	0.5 - 0.6	3.8	-	<0.4	<5	-	<5	10	-	<0.1	<5	-	28	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH13	12/02/2021	BH13_2.0-2.1	2 - 2.1	4.6	-	<0.4	6.3	-	23	29	-	<0.1	5.1	-	33	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH13	12/02/2021	FD03		3.7	-	<0.4	<5	-	<5	7.1	-	<0.1	<5	-	18	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH14	12/02/2021	BH14_0.0-0.1	0 - 0.1	5.6	-	<0.4	31	-	25	45	-	<0.1	18	-	160	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH14	12/02/2021	BH14_1.0-1.1	1 - 1.1	<2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	8.8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH15	12/02/2021	BH15_0.0-0.1	0 - 0.1	8	-	<0.4	34	-	31	55	-	<0.1	17	-	150	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<100	<100	<50	<50	190	<100	190
BH15	12/02/2021	BH15_1.4-1.5	1.4 - 1.5	6.3	-	<0.4	8.8	-	13	13	-	<0.1	7.2	-	44	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH16	12/02/2021	BH16_0.0-0.1	0 - 0.1	8.1	-	<0.4	14	-	17	18	-	<0.1	7.2	-	74	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<100	<100	<250	<250	<500	<500	<500
BH16	12/02/2021	BH16_1.7-1.8	1.7 - 1.8	5.6	-	<0.4	8.2	-	63	16	-	<0.1	7.2	-	46	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<100	<100	<50	<50	<100	<100	<100
BH17	12/02/2021	BH17_0.3-0.4	0.3 - 0.4	4.6	-	<0.4	<5	-	20	8.3	-	<0.1	<5	-	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH17	12/02/2021	BH17_1.0-1.1	1 - 1.1	7.3	-	0.7	20	-	410	140	<0.01	0.4	17	-	280	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH17	12/02/2021	FD04		4.1	-	<0.4	<5	-	21	14	-	<0.1	<5	-	97	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH18	12/02/2021	BH18_0.0-0.1	0 - 0.1	3.6	-	<0.4	33	-	21	21	-	<0.1	20	-	80	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<100	<100	<250	<250	<500	<500	<500
BH18	12/02/2021	BH18_0.3-0.4	0.3 - 0.4	3.8	-	<0.4	32	-	20	21	-	<0.1	26	-	50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	110	<100	110
BH19	12/02/2021	BH19_0.3-0.4	0.3 - 0.4	5.4	-	<0.4	20	-	16	21	-	<0.1	<5	-	80	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH19	12/02/2021	BH19_1.1-1.2	1.1 - 1.2	11	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
AVERAGE				19.51	-	0.128	15.71	-	64.87	54.71	-	0.03	9.596	-	451.9	<0.1	<0.1	0.006	0.011	0.032	0.043	<20	<20	6.732	6.809	23.62	<100	30.43
MAXIMUM				700	-	2.6	120	-	1900	1400	-	0.4	56	-	18000	<0.5	0.2	0.3	0.5	1.5	2	<100	<100	316.4	320	660	<500	980
MINIMUM				<2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
STANDARD DEVIATION				108.5	-	0.535	26.03	-	299.5	221.2	-	0.088	15.51	-	2802.6	0	0.031	0.047	0.078	0.234	0.312	0	0	49.41	49.98	109.1	0	156.6

Exceeds General Solid Waste Guidelines and is classified as "Restricted Solid Waste"

Exceeds Restricted Solid Waste Guidelines and is classified as "Hazardous Solid Waste"

Appendix D
Table C
In-Situ Waste Classification

				TRH - NEPM 1999					PAHs - standard 16																				
				C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ) (half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	PCBs (Total)
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg
LOR				20	20	50	50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	500
NSW EPA (2014) General Solid Waste CT1 (No Leaching)				650[#1]				10,000[#1]					0.8													200				50,000
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)				2,600[#1]				40,000[#1]					3.2													800				50,000
NSW EPA (2014) General Solid Waste SCC1 (Leachable Concentrations)																													
NSW EPA (2014) Restricted Solid Waste SCC2 (Leachable Concentrations)																													
Location Code	**Date**	**Field ID**	**Depth**																										
COMPOSITE 1	11/02/2021	COMPOSITE 1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 2	11/02/2021	COMPOSITE 2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 3	11/02/2021	COMPOSITE 3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 4	12/02/2021	COMPOSITE 4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 5	12/02/2021	COMPOSITE 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 6	12/02/2021	COMPOSITE 6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
BH01	11/02/2021	BH01_0.0-0.1	0 - 0.1	<20	<20	61	<50	61	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	1.6	<0.5	0.6	1.2	-
BH01	11/02/2021	BH01_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH02	11/02/2021	BH02_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH02	11/02/2021	BH02_1.9-2.0	1.9 - 2	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH02	11/02/2021	FD01		<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH03	11/02/2021	BH03_0.0-0.1	0 - 0.1	<20	<20	64	<50	64	<0.5	<0.5	<0.5	0.6	0.7	0.8	0.6	<0.5	0.6	<0.5	1.5	<0.5	<0.5	<0.5	0.8	1.4	7	0.9	1.2	1.5	-
BH03	11/02/2021	BH03_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH04	11/02/2021	BH04_0.3-0.4	0.3 - 0.4	<20	190	690	<50	880	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	3.6	3.9	1.5	0.5	6.6	<0.5	0.6	1.2	-
BH04	11/02/2021	BH04_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH05	11/02/2021	BH05_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH05	11/02/2021	BH05_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH06	11/02/2021	BH06_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH06	11/02/2021	BH06_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH07	11/02/2021	BH07_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH07	11/02/2021	BH07_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH07	11/02/2021	FD02		<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH08	11/02/2021	BH08_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH08	11/02/2021	BH08_2.0-2.1	2 - 2.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH09	11/02/2021	BH09_0.3-0.4	0.3 - 0.4	<20	<20	52	<50	52	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	2.1	<0.5	0.6	1.2	-
BH09	11/02/2021	BH09_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH10	12/02/2021	BH10_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH10	12/02/2021	BH10_1.3-1.4	1.3 - 1.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH11	12/02/2021	BH11_0.0-0.1	0 - 0.1	<20	<20	95	<50	95	<0.5	<0.5	<0.5	2.2	2.3	2.2	2	1.9	1.8	<0.5	4.6	<0.5	1.5	<0.5	<0.5	1.4	4.4	24.3	3.1	3.4	3.6	-
BH11	12/02/2021	BH11_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH12	12/02/2021	BH12_0.0-0.1	0 - 0.1	<20	<20	80	<50	80	<0.5	<0.5	<0.5	0.9	1	0.9	0.8	0.8	0.8	<0.5	1.9	<0.5	0.7	<0.5	<0.5	0.8	1.8	10.4	1.3	1.6	1.8	-
BH13	12/02/2021	BH13_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH13	12/02/2021	BH13_2.0-2.1	2 - 2.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH13	12/02/2021	FD03		<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH14	12/02/2021	BH14_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	0.5	0.6	0.6	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	0.5	1	4.2	0.7	1	1.3	-
BH14	12/02/2021	BH14_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH15	12/02/2021	BH15_0.0-0.1	0 - 0.1	<100	<20	170	<50	170	<0.5	<0.5	<0.5	<0.5	0.5	0.7	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<2.5	<0.5	<0.5	0.9	3.1	0.6	0.9	1.2	-
BH15	12/02/2021	BH15_1.4-1.5	1.4 - 1.5	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5	1	2	<0.5	0.6	1.2	-
BH16	12/02/2021	BH16_0.0-0.1	0 - 0.1	<100	<100	<250	<250	<250	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH16	12/02/2021	BH16_1.7-1.8	1.7 - 1.8	<100	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH17	12/02/2021	BH17_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH17	12/02/2021	BH17_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	1.1	1.1	1	0.8	0.7	0.8	<0.5	1.6	<0.5	0.7	<0.5	<0.5	0.6	1.6	10	1.5	1.7	2	-
BH17	12/02/2021	FD04		<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH18	12/02/2021	BH18_0.0-0.1	0 - 0.1	<100	<100	<250	<250	<250	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH18	12/02/2021	BH18_0.3-0.4	0.3 - 0.4	<20	<20	75	<50	75	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<0.5	<2.5	<2.5	<2.5	<2.5	<2.5	3	6.1	-
BH19	12/02/2021	BH19_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH19	12/02/2021	BH19_1.1-1.2	1.1 - 1.2	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
AVERAGE				<20	4.043	27.38	<50	31.42553	<0.5	<0.5	<0.5	0.113	0.132	0.145	0.089	0.072	0.085	<0.5	0.319	<0.5	0.062	0.077	0.083	0.119	0.298	1.517	0.172	0.706	1.24	0
MAXIMUM				<100	190	690	<250	880	<2.5	<2.5	<2.5	2.2	2.3	2.2	2	1.9	1.8	<2.5	4.6	<2.5	1.5	3.6	3.9	1.5	4.4	24.3	3.1	3.4	6.1	0
MINIMUM				<20	190	52	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	0
STANDARD DEVIATION				0	29.67	111.4	0	139.7912	0	0	0	0.412	0.438	0.429	0.361	0.334	0.335	0	0.852	0	0.275	0.562	0.609	0.365	0.812	4.487	0.583	0.604	0.849	0

Exceeds General Solid Waste Guidelines and is classified as "Restricted Solid Waste"
Exceeds Restricted Solid Waste Guidelines and is classified as "Hazardous Solid Waste"

Appendix D
Table D
QA/QC Duplicates

			Matrix Type	soil	soil		soil	soil		soil	soil		soil	soil	
			Sample Type	Normal	Field_D		Normal	Field_D		Normal	Field_D		Normal	Field_D	
			Field ID	BH02_1.9-2.0	FD01		BH07_0.0-0.1	FD02		BH13_0.5-0.6	FD03		BH17_0.3-0.4	FD04	
			Date	11/02/2021	11/02/2021	RPD	11/02/2021	11/02/2021	RPD	12/02/2021	12/02/2021	RPD	12/02/2021	12/02/2021	RPD
	Unit	LOR													
Inorganics															
Metals															
Arsenic	mg/kg	2	6.7	6.5	3	4.4	4.0	10	3.8	3.7	3	4.6	4.1	11
Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0
Chromium (III+VI)	mg/kg	5	6.8	8.5	22	<5	<5	0	<5	<5	0	<5	<5	0
Copper	mg/kg	5	<5	<5	0	<5	<5	0	<5	<5	0	20	21	5
Lead	mg/kg	5	<5	<5	0	7.2	<5	**36**	10	7.1	**34**	8.3	14	**51**
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Nickel	mg/kg	5	5.7	5.9	3	<5	<5	0	<5	<5	0	<5	<5	0
Zinc	mg/kg	5	11	12	9	25	8.0	**103**	28	18	**43**	100	97	3
BTEXN															
Benzene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Toluene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Xylene (o)	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0
Xylene (m & p)	mg/kg	0.2	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0	<0.2	<0.2	0
Xylene Total	mg/kg	0.3	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.3	0	<0.3	<0.3	0
TRH - NEPM 2013															
F1 (C6-C10 minus BTEX)	mg/kg	20	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0
C6-C10 Fraction	mg/kg	20	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0
F2 (>C10-C16 minus Naphthalene)	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
>C10-C16 Fraction	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
F3 (>C16-C34 Fraction)	mg/kg	100	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0
F4 (>C34-C40 Fraction)	mg/kg	100	<100	<100	0	<100	<100	0	<100	<100	0	<100	<100	0
TRH - NEPM 1999															
C6-C9 Fraction	mg/kg	20	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0
C10-C14 Fraction	mg/kg	20	<20	<20	0	<20	<20	0	<20	<20	0	<20	<20	0
C15-C28 Fraction	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
C29-C36 Fraction	mg/kg	50	<50	<50	0	<50	<50	0	<50	<50	0	<50	<50	0
PAHs - standard 16															
Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benzo[b+j]fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Benzo(g,h,i)perylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Chrysene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Fluoranthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Naphthalene-PAH	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Phenanthrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0
Pyrene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0	<0.5	<0.5	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: organics: 50%, inorganics: 30%

Appendix E – Borehole logs

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

Client Port of Newcastle
Project Denison Street development environmental & mine subsiden
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 11/02/2021 - 11/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 1.20
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT	0.2	BH01_0.0_0.1			CONCRETE				0
0.1						SILT grey, with coarse gravel, and medium gravel (FILL)	VM		no odour no staining	-0.1
0.5		0.3	BH01_0.5_0.6							-0.5
0.6						SAND fine, poorly graded, angular to subangular, yellow, with shells (possible FILL)	M		no odour no staining	-0.6
0.9						SAND medium to coarse, well graded, rounded, yellow, with shells (possible FILL - SOIL)	VM		no odour no staining	-0.9
1		0.3	BH01_1.0_1.1							-1
1.2						Termination Depth at: 1.20 m. Machinery issues.				-1.2

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH02

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 11/02/2021 - 11/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.00
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT	0.5	BH02_0.0_0.1			CONCRETE				
0.1						Clayey SAND medium, grey (FILL)	M		no odour no staining	-0.1
0.2										-0.2
0.3		0.3	BH02_0.3_0.4			CLAY low plasticity, grey, with coarse gravel (FILL)	SM		no odour no staining	-0.3
0.4										-0.4
0.5										-0.5
0.6		0.7	BH02_0.6_0.7			SAND fine, yellow (possible FILL)	SM		no odour no staining	-0.6
0.7										-0.7
0.8						SAND medium, yellow (possible FILL)	M		no odour no staining	-0.8
0.9										-0.9
1		0.7	BH02_1.0_1.1							-1
1.1										-1.1
1.2				▽		Silty SAND fine, dark grey (NATURAL - SOIL)	W		no odour no staining	-1.2
1.3										-1.3
1.4										-1.4
1.5										-1.5
1.6										-1.6
1.7										-1.7
1.8										-1.8
1.9		0.6	BH02_2.0_2.1 (FD01)							-1.9
2						Termination Depth at: 2.00 m. Target depth achieved.				-2

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH03

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 11/02/2021 - 11/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT	0.4	BH03_0.0_0.1			CONCRETE			Concrete to 160mm	0
0.1										-0.1
0.2						SAND fine, grey, with medium to coarse gravel (FILL)	W		no odour no staining	-0.2
0.3			BH03_0.3_0.4			SAND fine to medium, dark yellow (FILL)	SM		no odour no staining	-0.3
0.4						Silty CLAY low plasticity, dark grey, with concrete, and coarse gravel (possible FILL - SOIL)	SM		no odour no staining, some brick fragments	-0.4
0.5		0.4	BH03_0.5_0.6							-0.5
0.6										-0.6
0.7										-0.7
0.8										-0.8
0.9						SAND fine, yellow, trace fine gravel (possible FILL - SOIL)	SM		no odour no staining	-0.9
1		0.3	BH03_1.0_1.1							-1
1.1										-1.1
1.2										-1.2
1.3										-1.3
1.4										-1.4
1.5										-1.5
1.6										-1.6
1.7						SAND medium, yellow, trace fine gravel (possible FILL - SOIL)	SM		no odour no staining	-1.7
1.8										-1.8
1.9		0.3	BH03_2.0_2.1			SAND medium to coarse, dark grey (NATURAL - SOIL)	M		no odour no staining	-1.9
2										-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1
2.2										-2.2

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH04

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 11/02/2021 - 11/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT	0.5	BH04_0.0_0.1			CONCRETE			150mm	
0.1										-0.1
0.2						SAND fine to medium, black and brown, with fine to coarse gravel, and concrete (FILL)	SM		no odour no staining	-0.2
0.3		0.7	BH04_0.3_0.4			SAND fine, black and brown, some fine to medium gravel (FILL)	SM		no odour no staining, some polystyrene and glass	-0.3
0.4										-0.4
0.5		1.2	BH04_0.5_0.6			SAND medium, yellow, some fine gravel (possible FILL)	SM		no odour no staining	-0.5
0.6										-0.6
0.7										-0.7
0.8										-0.8
0.9										-0.9
1										-1
1.1		0.8	BH04_1.1_1.2			SAND medium, dark grey, trace fine gravel (NATURAL - SOIL)	SM		no odour no staining	-1.1
1.2										-1.2
1.3										-1.3
1.4						SAND medium, yellow (NATURAL - SOIL)	M		no odour no staining	-1.4
1.5										-1.5
1.6										-1.6
1.7				▽		SAND medium, dark yellow (NATURAL - SOIL)	VM		no odour no staining	-1.7
1.8										-1.8
1.9										-1.9
2		1.2	BH04_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1
2.2										-2.2

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 11/02/2021 - 11/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH05_0.0_0.1			CONCRETE			130mm	0
0.1						SAND medium, grey, with fine to coarse gravel, and concrete (FILL)	W		no odour no staining, some brick fragments	-0.1
0.2						SAND fine to medium, grey and black (FILL)	M		no odour no staining	-0.2
0.3		0.4	BH05_0.3_0.4							-0.3
0.4						SAND medium to coarse, yellow, some fine gravel (possible FILL - SOIL)	M		no odour no staining	-0.4
0.5		0.7	BH05_0.5_0.6							-0.5
0.6										-0.6
0.7										-0.7
0.8										-0.8
0.9										-0.9
1		1.2	BH05_1.0_1.1			Silty CLAY medium plasticity, grey, with fine sand (possible FILL - SOIL)	SM		no odour no staining	-1
1.1										-1.1
1.2										-1.2
1.3						SAND medium to coarse, yellow, with fine gravel (NATURAL - SOIL)	VM		no odour no staining	-1.3
1.4										-1.4
1.5										-1.5
1.6										-1.6
1.7				▽		SAND medium to coarse, dark yellow, with fine gravel (NATURAL - SOIL)	W		no odour no staining	-1.7
1.8										-1.8
1.9		1.1	BH05_1.9_2							-1.9
2										-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1
2.2										-2.2

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 11/02/2021 - 11/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT	0.8	BH06_0.0_0.1			CONCRETE			130mm	
0.1						SAND fine, grey, with silt, and fine to medium gravel (FILL)	S		no odour no staining, trace brick fragments	-0.1
0.2										-0.2
0.3		1.2	BH06_0.3_0.4			SAND medium, dark grey, with fine gravel (FILL)	M		no odour no staining	-0.3
0.4						SAND medium, yellow, trace fine gravel (possible FILL - SOIL)	SM		no odour no staining	-0.4
0.5		0.9	BH06_0.5_0.6							-0.5
0.6										-0.6
0.7						SAND fine to medium, pale yellow, trace fine gravel (possible FILL - SOIL)	SM		no odour no staining	-0.7
0.8										-0.8
0.9										-0.9
1										-1
1.1		1.5	BH06_1.1_1.2			Silty CLAY medium plasticity, grey, some fine to medium sand (possible FILL - SOIL)	SM		no odour no staining	-1.1
1.2						SAND medium, dark yellow, trace fine gravel (NATURAL - SOIL)	VM		no odour no staining	-1.2
1.3										-1.3
1.4										-1.4
1.5										-1.5
1.6										-1.6
1.7				▽		SAND medium, dark yellow, trace fine gravel (NATURAL - SOIL)	W		no odour no staining	-1.7
1.8										-1.8
1.9										-1.9
2		1.2	BH06_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1
2.2										-2.2

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH07

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 11/02/2021 - 11/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.90
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
	PT	0.8	BH07_0.0_0.1 (FD02)			CONCRETE			0.045m concrete	
						SAND medium, dark yellow, some fine gravel, and shells (possible FILL - SOIL)	M		no odour no staining	
0.2										-0.2
		0.9	BH07_0.3_0.4							
0.4										-0.4
		1.7	BH07_0.5_0.6							
0.6										-0.6
0.8										-0.8
						SAND medium, dark brown (possible FILL - SOIL)	VM		no odour no staining	
1		1.1	BH07_1.0_1.1			Silty CLAY medium plasticity, dark brown (possible FILL - SOIL)	SM		no odour no staining	-1
1.2										-1.2
						SAND medium, yellow (NATURAL - SOIL)	M		no odour no staining	
1.4										-1.4
1.6										-1.6
				▽		SAND medium, yellow- brown (NATURAL - SOIL)	VM		no odour no staining	
1.8										-1.8
2		1.1	BH07_2.0_2.1							-2
2.2										-2.2
						Silty CLAY medium plasticity, dark grey, trace medium sand (NATURAL - SOIL)	M		no odour no staining	
2.4										-2.4
2.6										-2.6
2.8										-2.8
						Termination Depth at: 2.90 m. Target depth achieved.				
3										-3

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH08

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 11/02/2021 - 11/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
	PT	0.6	BH08_0.0_0.1			CONCRETE			130mm	
0.1										-0.1
						SAND medium, orange- brown, some fine to medium gravel (possible FILL - SOIL)	SM		no odour no staining	
0.2										-0.2
0.3		1	BH08_0.3_0.4			SAND medium, grey, some fine gravel (possible FILL - SOIL)	SM		no odour no staining	-0.3
0.4										-0.4
0.5		0.9	BH08_0.5_0.6			SAND medium to coarse, yellow, some fine gravel (possible FILL - SOIL)	D		no odour no staining	-0.5
0.6										-0.6
0.7										-0.7
0.8						SAND medium to coarse, yellow- grey, some shells possible FILL - SOIL)	M		no odour no staining	-0.8
0.9										-0.9
1		1.2	BH08_1.0_1.1							-1
1.1										-1.1
1.2						Sandy CLAY low to medium plasticity, black, trace rootlets (NATURAL - SOIL)	SM		no odour no staining	-1.2
1.3						SAND fine to coarse, grey and yellow, some fine gravel (NATURAL - SOIL)	SM		no odour no staining	-1.3
1.4										-1.4
1.5										-1.5
1.6										-1.6
1.7										-1.7
1.8										-1.8
1.9										-1.9
2		1	BH08_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1
2.2										-2.2

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH09

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 11/02/2021 - 11/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
	PT	0.3	BH09_0.0_0.1			CONCRETE				
0.1						SAND medium to coarse, yellow- brown, with medium to coarse gravel (FILL)	M		no odour no staining	-0.1
0.2						SAND medium to coarse, yellow- brown (FILL)	SM		no odour no staining	-0.2
0.3		1	BH09_0.3_0.4			SAND medium, pale yellow, trace shells (possible FILL - SOIL)	SM		no odour no staining	-0.3
0.4										-0.4
0.5		1	BH09_0.5_0.6							-0.5
0.6										-0.6
0.7										-0.7
0.8										-0.8
0.9										-0.9
1		1	BH09_1.0_1.1			SAND medium, pale yellow, trace shells (possible FILL - SOIL)	VM		no odour no staining	-1
1.1										-1.1
1.2										-1.2
1.3						Silty CLAY low to medium plasticity, dark grey, some fine to medium sand (possible FILL - SOIL)	SM			-1.3
1.4						SAND coarse, black, with fine gravel, trace shells (NATURAL - SOIL)	M		no odour no staining	-1.4
1.5						SAND coarse, yellow, some fine gravel, and shells (NATURAL - SOIL)	M			-1.5
1.6										-1.6
1.7										-1.7
1.8				▽		SAND medium to coarse, grey and pale yellow (NATURAL - SOIL)	VM		no odour no staining	-1.8
1.9										-1.9
2		1.6	BH09_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1
2.2										-2.2

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH10

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH10_0.0_0.1			Gravelly SILT brown, some wood (FILL)	SM		no odour no staining	0
0.2						Clayey SILT brown, with fine to medium gravel, and wood (FILL)	SM		no odour no staining	-0.2
0.3			BH10_0.3_0.4			SAND fine to medium, yellow, trace fine gravel (possible FILL - SOIL)	SM		no odour no staining	-0.3
0.5			BH10_0.5_0.6							-0.5
1						SAND fine to medium, yellow, trace fine gravel (possible FILL - SOIL)	VM		no odour no staining	-1
1.3			BH10_1.3_1.4			CLAY low to medium plasticity, black (possible FILL - SOIL)	M		weak organic odour no staining	-1.3
1.6				▽		SAND fine to medium, grey- yellow (NATURAL - SOIL)	VM		no odour no staining	-1.6
2			BH10_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH11

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH11_0.0_0.1			Gravelly SILT fine, brown, some wood, and brick fragments (FILL)	SM		no odour no staining	0
0.2						SILT fine, brown, with medium to coarse gravel (FILL)	SM		no odour no staining	-0.2
0.3			BH11_0.3_0.4			SAND fine to medium, yellow, some shells (possible FILL - SOIL)	SM		no odour no staining	-0.3
0.5			BH11_0.5_0.6							-0.5
0.8						SAND fine to medium, yellow, some shells (possible FILL - SOIL)	M		no odour no staining	-0.8
1.3			BH11_1.3_1.4			Silty CLAY medium plasticity, black (possible FILL - SOIL)	SM		no odour no staining	-1.3
1.7				▽		SAND medium to coarse, grey- yellow (NATURAL - SOIL)	W		no odour no staining	-1.7
2			BH10_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH12

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH12_0.0_0.1			Gravelly SILT brown, with wood, and rootlets, medium to coarse gravel (FILL)	SM		no odour no staining, some brick fragments	
0.3			BH12_0.3_0.4			SAND medium to coarse, yellow, trace shells (possible FILL - SOIL)	SM		no odour no staining	-0.3
0.5			BH12_0.5_0.6							-0.5
0.6						SAND medium to coarse, yellow, trace shells (possible FILL - SOIL)	M		no odour no staining	-0.6
1			BH12_1.0_1.1							-1
1.1			BH12_1.1_1.2			Silty CLAY low to medium plasticity, red- brown (possible FILL - SOIL)	SM		no odour no staining	-1.1
1.2						Silty SAND medium to coarse, dark yellow and grey (possible FILL - SOIL)	M		no odour no staining	-1.2
1.3						Silty CLAY medium plasticity, red- brown (possible FILL - SOIL)	SM		no odour no staining	-1.3
1.6						SAND medium to coarse, yellow- grey, with shells (NATURAL - SOIL)	M		no odour no staining	-1.6
1.8				▽		SAND medium to coarse, yellow- grey, with shells (NATURAL - SOIL)	W		no odour no staining	-1.8
2			BH12_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH13

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH13_0.0_0.1			Gravelly SILT fine to medium, red- brown, with wood, and brick fragments, fine to coarse gravel (FILL)	SM		no odour no staining	0
0.3			BH13_0.3_0.4			SAND medium to coarse, yellow- grey (possible FILL - SOIL)	SM		no odour no staining	-0.3
0.5			BH13_0.5_0.6 (FD03)							-0.5
0.6						SAND medium to coarse, dark yellow- grey, with silt (possible FILL- SOIL)	SM		no odour no staining	-0.6
0.9						SAND medium to coarse, yellow- grey (possible FILL - SOIL)	SM		no odour no staining	-0.9
1.1			BH13_1.1_1.2							-1.1
1.2						Clayey SAND low plasticity, coarse, yellow- grey and black (possible FILL- SOIL)	M		no odour no staining	-1.2
1.3				▽		Silty CLAY medium to high plasticity, black (NATURAL - SOIL)	M		no odour no staining	-1.3
1.8						SAND coarse, black (NATURAL - SOIL)	VM		no odour no staining	-1.8
2			BH13_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1

Notes

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Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH14

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH14_0.0_0.1			Gravelly SILT fine, brown, with rootlets, fine to coarse gravel (FILL)	D		no odour no staining	0
0.5			BH14_0.5_0.6			SAND medium, pale yellow, trace shells (possible FILL - SOIL)	SM		no odour no staining	-0.5
1			BH14_1.0_1.1			SAND medium to coarse, yellow and black (possible FILL- SOIL)	W		no odour no staining	-1
1.5						Silty CLAY medium to high plasticity, dark grey (possible FILL - SOIL)	VM		no odour no staining	-1.5
1.7			BH14_1.7_1.8							-1.7
1.8				▽		Clayey SAND medium, black (NATURAL - SOIL)	W		no odour no staining	-1.8
1.9						SAND medium to coarse, grey, with shells (NATURAL - SOIL)	W		no odour no staining	-1.9
2			BH14_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH15

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH15_0.0_0.1			Clayey SILT low plasticity, grey- brown, with fine to coarse gravel, and wood (FILL)	SM		no odour no staining	0
0.5			BH15_0.5_1.1			SAND medium to coarse, dark yellow, some shells (possible FILL - SOIL)	SM		no odour no staining	-0.5
1.4			BH15_1.4_1.5			Clayey SAND fine, yellow- brown, some fine gravel (possible FILL - SOIL)	SM		no odour no staining	-1.4
1.6			BH15_1.6_1.7			CLAY medium to high plasticity, grey- brown (possible FILL - SOIL)	VM		no odour no staining	-1.6
1.7				▽		Silty SAND coarse, black and dark yellow- grey (NATURAL - SOIL)	W		no odour no staining	-1.7
1.8						SAND coarse, yellow- grey (NATURAL - SOIL)	W		no odour no staining	-1.8
2			BH15_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH16

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH16_0.0_0.1			GRAVEL fine to coarse, yellow- grey, with silt, and concrete (FILL)	D		no odour no staining	0
0.3			BH16_0.3_0.4			Gravelly SILT fine, pale grey, medium to coarse gravel (FILL)	D		no odour no staining	-0.3
0.4						SAND yellow and black, with shells (possible FILL - SOIL)				-0.4
0.5			BH16_0.5_0.6							-0.5
1.4			BH16_1.4_1.5			Clayey SAND medium, pale yellow and red- brown (possible FILL - SOIL)	M		no odour no staining	-1.4
1.6			BH16_1.6_1.7	▽		CLAY high plasticity, dark grey (possible FILL - SOIL)	VM		no odour no staining	-1.6
1.7			BH16_1.7_1.8			Clayey SAND coarse, dark grey, some shells (NATURAL - SOIL)	W		weak H2S odour no staining	-1.7
1.8						SAND coarse, grey, trace shells (NATURAL - SOIL)	W		distinct H2S odour no staining	-1.8
2			BH16_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH17

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH17_0.0_0.1			Gravelly SILT fine, brown, fine to coarse gravel (FILL)	D		no odour no staining	0
0.3			BH17_0.3_0.4 (FD04)			SAND fine to medium, dark yellow and grey (possible FILL - SOIL)	D		no odour no staining	-0.3
1			BH17_1.0_1.1			CLAY low plasticity, yellow- brown, with fine to medium gravel (possibleFILL - SOIL)	SM		no odour no staining	-1
1.4						CLAY low plasticity, red- brown, trace fine gravel (possible FILL - SOIL)	SM		no odour no staining	-1.4
1.5			BH17_1.5_1.6							-1.5
1.8						Clayey SAND fine, dark yellow, with shells (NATURAL - SOIL)	M		no odour no staining	-1.8
1.9				▽		SAND coarse, yellow, trace shells (NATURAL - SOIL)	W		no odour no staining	-1.9
2			BH17_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH18

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 0.40
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH18_0.0_0.1			Gravelly SILT fine, brown, with wood, fine to coarse gravel (FILL)	D		no odour no staining	0
0.02										-0.02
0.04										-0.04
0.06										-0.06
0.08										-0.08
0.1										-0.1
0.12										-0.12
0.14										-0.14
0.16										-0.16
0.18										-0.18
0.2										-0.2
0.22										-0.22
0.24										-0.24
0.26										-0.26
0.28										-0.28
0.3			BH18_0.3_0.4							-0.3
0.32										-0.32
0.34										-0.34
0.36										-0.36
0.38										-0.38
0.4						Termination Depth at: 0.40 m. Refusal on unindentified surface.				-0.4

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

BOREHOLE LOG

ENVIRONMENTAL-SOIL BORE

SOIL BORE BH19

Client Port of Newcastle
Project Denison Street development
Project No. 12545790
Site 65 Denison Street, Carrington
Location 65 Denison Street
Date Drilled 12/02/2021 - 12/02/2021

Drill Co. Total Drilling
Driller Chris Kiernan
Rig Type Track Mounted Drill Rig
Total Depth (m) 2.10
Diameter (mm) 80

Easting
Northing
Grid Ref GDA94_MGA_zone_56
Elevation
Logged By LT
Checked By RM

Depth (m)	Drilling Method	PID (ppm)	Sample ID	Water	Graphic Log	LITHOLOGICAL DESCRIPTION Soil Type (Classification Group Symbol); Particle Size; Colour; Secondary / Minor Components.	Moisture	Consistency	COMMENTS/ CONTAMINANT INDICATORS Odours, staining, waste materials,separate phase liquids, imported fill, ash.	Elevation (m)
0	PT		BH19_0.0_0.1			Gravelly SILT brown, with rootlets (FILL)	D		no odour no staining	0
0.1						Gravelly SILT fine, grey, fine to coarse gravel (FILL)	D		no odour no staining	-0.1
0.3			BH19_0.3_0.4_986			SAND medium, pale yellow and pale grey- brown, trace shells (possible FILL - SOIL)	SM		no odour no staining	-0.3
1						SAND medium to coarse, yellow (possible FILL - SOIL)	SM		no odour no staining	-1
1.1			BH19_1.1_1.2							-1.1
1.3				▽		SAND medium to coarse, yellow (possible FILL - SOIL)	VM		no odour no staining	-1.3
1.4						Sandy CLAY no plasticity, brown- yellow (possible FILL - SOIL)	M		no odour no staining	-1.4
1.5			BH19_1.5_1.6			SAND medium to coarse, pale yellow (NATURAL - SOIL)	VM		no odour no staining	-1.5
1.8						CLAY medium to high plasticity, dark grey (NATURAL - SOIL)	VM		no odour no staining	-1.8
2			BH19_2.0_2.1							-2
2.1						Termination Depth at: 2.10 m. Target depth achieved.				-2.1

Notes

This log is not intended for geotechnical purposes.

Drilling Abbreviations	Moisture Abbreviations	Consistency Abbreviations	
AH-Air Hammer, AR-Air Rotary, BE-Bucket Excavation, CC-Concrete Coring, DC-Diamond Core, FH-Foam Hammer, HA-Hand Auger, HE-Hand Excavation (shovel), HFA-Hollow Flight Auger, MR-Mud Rotary, NDD-Non Destructive Drilling, PT-Pushtube, SD-Sonic Drilling, SFA-Solid Flight Auger, SS-Split Spoon, WB-Wash Bore, WS-Window Sampler	D-Dry, SM-Slightly Moist, M-Moist, VM-Very Moist, W-Wet, S-Saturated	**Granular Soils** VL-Very Loose, L-Loose, MD-Medium Dense, D-Dense,VD - Very Dense	**Cohesive Soils** VS-Very Soft, S-Soft, F-Firm, ST-Stiff, VST-Very Stiff, H-Hard

Appendix F – Quality assurance/quality control

QA/QC Data Validation Report

Project: Denison Street Development Job Number: 12545790

Date: February 2021 Laboratory Batch Numbers: 774362, 775858, 776132

1. Field QA/QC	Soil	Water	Comments
Number of Primary Samples analysed (do not include duplicates)	38	-	
Number of Days Sampling	2	-	
Number and Type of QA/QC Samples analysed:			
Intra-Laboratory Field Duplicates	4		FD01 (duplicate of BH02_1.9-2.0), FD02 (duplicate of BH07_0.0-0.1), FD03 (duplicate of BH13_0.5-0.6) and FD04 (duplicate of BH17_0.3-0.4)
Inter-Laboratory Field Duplicates	0	-	
Trip Blanks	2	0	TB01, TB02 All BTEX concentrations for trip blanks were below the LOR, indicating no cross contamination of samples during transport.
Wash Blanks	0	0	Rinsates were not considered to be required as dedicated sampling equipment was used at each location.
Other (Field Blanks, Spiked Trip Blanks, etc.)	2	0	Trip Spikes - TS01 and TS02. All concentrations were within the acceptable range (70 – 130%) indicating that the transport and storage of samples did not result in the loss of volatiles.

2. Sample Handling	Yes	No	NA	Comments
Were the sample holding times met?	X			
Were the samples in proper custody between the field and reaching this laboratory?	X			
Were the samples properly and adequately preserved?	X			
Did the laboratory receive the samples in good condition?	X			

3. Precision/Accuracy Assessment	Yes	No	NA	Comments
Was a NATA registered laboratory used?	X			Eurofins
Did the laboratory perform the requested tests?	X			
Were the laboratory methods adopted NATA endorsed?	X			
Were the appropriate test procedures followed?	X			
Were the reporting limits satisfactory?	X			It is noted, however that the LORs for TRH F2 were raised to levels greater than the NEPM ESL in two samples and, as such, could also represent exceedances.
Was the NATA Seal on the reports?	X			
Did an authorised person sign the reports?	X			
4. Field Duplicates	**Yes**	**No**	**NA**	**Comments**
Were an Adequate Number of intra and inter-laboratory field duplicates analysed?	X			4 intra-laboratory duplicates for 19 samples
Were RPDs within Control Limits? a. Organics (+50%) b. Metals/Inorganics (+30%) c. Nutrients (+50%)		X		The following relative percentage difference (RPD) exceedances were observed during this monitoring round: BH07_0.0-0.1/FD02 – Lead RPD 36%, Zinc RPD 103% BH13_0.5-0.6/FD03 – Lead RPD 34%, Zinc RPD 43% BH17_0.3-0.4/FD04 – Lead RPD 51% - . This RPD exceedances were minor and attributed to sample heterogeneity resulting in elevated RPDs.
5. Trip Blanks/Wash Blanks	**Yes**	**No**	**NA**	**Comments**
Were an Adequate Number of trip blanks analysed?	X			2 trip blanks were taken to site and analysed (one for each day of sampling)
Were an Adequate Number of wash blanks analysed?			X	
Were the Trip Blanks free of contaminants?	X			
Were the Wash Blanks free of contaminants? (If no, were contaminants present also detected in the samples/ are they common laboratory chemicals.)			X	

6. Trip Spikes	Yes	No	NA	Comments
Were an adequate number of Trip Spikes analysed?	X			2 trip spikes were taken to site and analysed (one for each day of sampling).
Were the Trip Spike results within control limits?	X			

7. Laboratory Internal Quality Control Procedures	Soil	Water	Comments
Method Blanks	Pass	-	
Matrix Spikes	Pass	-	
Laboratory Control Samples/Spikes	Pass	-	
Laboratory Duplicates	Pass*	-	*2 RPD exceedances (see below)
Surrogates	Pass	-s	

7. Laboratory Internal Quality Control Procedures	Yes	No	Comments
Were the method blanks free of contamination?	X		
Were the spike recoveries within control limits? a. Organics (60% to 120%) b. Metals/Inorganic (70% to 130%)	X		
Were the RPDs of the laboratory duplicates within control limits?		X	Two RPD exceedances (>30%) were reported for lead and zinc. Eurofins reported that the RPD passed the Eurofin's Environment Testing QC- Acceptance criteria.
Were the surrogate recoveries within control limits?	X		

8. Summary of QA/OC Report	Satisfactory	Partially Satisfactory	Unsatisfactory	Comments
Sample Handling	X			
Precision/Accuracy of the Laboratory Report	X			
Field QA/QC	X			
Laboratory Internal QA/QC	X			

9. Data Usability		Comments
Data Directly Usable	X	
Data Usable with the following qualifications		
Data Not Usable		

QA/QC Report Prepared by: Ruth Madden

QA/QC Report Checked by: Alison Monkley

Appendix G – Laboratory reports

eurofins mgt

☑ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murarie
Phone: +617 3902 4600
Email: enviro.bris@mgtlabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD	Contact Name:	Ruth Madden	Purchase Order :	12545790
Office Address :	Level 3, 24 Honeysuckle Drive Newcastle	Project Manager :	Ruth Madden	PROJECT Number :	12545790
		Email for results :	ruth.madden@ghd.com	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 1: BH01_0.0-0.1, BH02_0.0-0.1 and BH03_0.0-0.1
COMP 2: BH04_0.3-0.4, BH05_0.3-0.4, BH06_0.0-0.1

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS
1	BH01_0.0-0.1	########	Soil	X	comp 1	X	
2	BH01_0.5-0.6	########	Soil	X			
3	BH01_1.0-1.1	########	Soil				
4	BH02_0.0-0.1	########	Soil		COMP 1		
5	BH02_0.3-0.4	########	Soil	X			
6	BH02_0.6-0.7	########	Soil				
7	BH02_1.0-1.1	########	Soil				
8	BH02_1.9-2.0	########	Soil	X			
9	BH03_0.0-0.1	########	Soil	X	COMP 1		
10	BH03_0.3-0.4	########	Soil				
11	BH03_0.5-0.6	########	Soil	X			
12	BH03_1.0-1.1	########	Soil				
13	BH03_2.0-2.1	########	Soil				
14	BH04_0.0-0.1	########	Soil				
15	BH04_0.3-0.4	########	Soil	X	COMP 2	X	
16	BH04_0.5-0.6	########	Soil				X

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Laboratory Staff

Relinquished By:	LT
Date & Time::	12/02/2021
Signature:	LT
Received By:	M.R
Date & Time:	15/2/21 10:30AM
Signature:	

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☒ 10 DAY ☐ Other:

Method Of Shipment

☒ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1°C
Report number: 774362

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Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

Brisbane
Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600
Email: enviro.bris@mgtlabmark.com.au

Melbourne
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD
Office Address : Level 3, 24 Honeysuckle Drive
Newcastle

Contact Name: Ruth Madden
Project Manager : Ruth Madden
Email for results : ruth.madden@ghd.com

Purchase Order : 12545790
PROJECT Number : 12545790
PROJECT Name :

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 3: BH07_0.0-0.1, BH08_0.0-0.1, BH09_0.3-0.4

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS
1	BH04_1.0-1.1	11/02/2021	Soil	X			
2	BH04_2.0-2.1	11/02/2021	Soil				
3	BH05_0.0-0.1	11/02/2021	Soil				
4	BH05_0.3-0.4	11/02/2021	Soil	X	COMP 2		
5	BH05_0.5-0.6	11/02/2021	Soil				
6	BH05_1.0-1.1	11/02/2021	Soil	X			
7	BH05_1.9-2.0	11/02/2021	Soil				
8	BH06_0.0-0.1	11/02/2021	Soil	X	COMP 2		X
9	BH06_0.3-0.4	11/02/2021	Soil				
10	BH06_0.5-0.6	11/02/2021	Soil				
11	BH06_1.0-1.1	11/02/2021	Soil	X			
12	BH06_2.0-2.1	11/02/2021	Soil				
13	BH07_0.0-0.1	11/02/2021	Soil	X	COMP 3	X	
14	BH07_0.3-0.4	11/02/2021	Soil				
15	BH07_0.5-0.6	11/02/2021	Soil	X			
16	BH07_1.0-1.1	11/02/2021	Soil				

Analytes

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Relinquished By: LT
Date & Time:: 12/02/2021
Signature: LT

Laboratory Staff
Received By: MR
Date & Time: 15/2/21 10:30AM
Signature:

Turn around time
1 DAY [ ] 2 DAY [ ] 3 DAY [ ]
5 DAY [X] 10 DAY [ ] Other: [ ]

Method Of Shipment
[X] Courier
[ ] Hand Delivered
[ ] Postal
Courier Consignment # :

Temperature on arrival: 21.1°C

Report number: 774362

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Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

Brisbane
Unit 1-21 Smallwood Place, Murrarie
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Email: enviro.bris@mgtlabmark.com.au

Melbourne
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD	Contact Name:	Ruth Madden	Purchase Order :	12545790
Office Address :	Level 3, 24 Honeysuckle Drive Newcastle	Project Manager :	Ruth Madden	PROJECT Number :	12545790
		Email for results :	ruth.madden@ghd.com	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 4: BH10_0.3-0.4, BH11_0.0-0.1, BH12-0.0-0.1

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS
1	BH07_2.0-2.1	########	Soil				
2	BH08_0.0-0.1	########	Soil	X	COMP 3		X
3	BH08_0.3-0.4	########	Soil				
4	BH08_0.5-0.6	########	Soil				
5	BH08_1.0-1.1	########	Soil				
6	BH08_2.0-2.1	########	Soil	X			X
7	BH09_0.0-0.1	########	Soil				
8	BH09_0.3-0.4	########	Soil	X	COMP 3	X	
9	BH09_0.5-0.6	########	Soil				
10	BH09_1.0-1.1	########	Soil	X			
11	BH09_2.0-2.1	########	Soil				
12	BH10_0.0-0.1	########	Soil				
13	BH10_0.3-0.4	########	Soil	X	COMP 4	X	
14	BH10_0.5-0.6	########	Soil				
15	BH10_1.3-1.4	########	Soil	X			
16	BH10_2.0-2.1	########	Soil				

Analytes

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

	Laboratory Staff	Turn around time	Method Of Shipment	
Relinquished By: LT	Received By: MR	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☒ Courier	Temperature on arrival: 21.1°C
Date & Time:: 12/02/2021	Date & Time: 15/2/21 10:30AM	5 DAY ☒ 10 DAY ☐ Other: ☐	☐ Hand Delivered	
Signature: LT	Signature:		☐ Postal	Report number: 774362
			Courier Consignment # :	

eurofins mgt

Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
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Email: enviro.bris@mgtlabmark.com.au

Melbourne
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD	Contact Name:	Ruth Madden	Purchase Order :	12545790
Office Address :	Level 3, 24 Honeysuckle Drive Newcastle	Project Manager :	Ruth Madden	PROJECT Number :	12545790
		Email for results :	ruth.madden@ghd.com	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 5: BH13_0.5-0.6, BH17_0.3-0.4, BH18_0.3-0.4, BH19_0.3-0.4

Eurofins | mgt DI water batch number:

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

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

Analytes

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS	Containers:	Sample comments:
1	BH11_0.0-0.1	########	Soil	X	COMP 4				
2	BH11_0.3-0.4	########	Soil						
3	BH11_0.5-0.6	########	Soil	X					
4	BH11_1.3-1.4	########	Soil						
5	BH11_2.0-2.1	########	Soil						
6	BH12_0.0-0.1	########	Soil	X	COMP 4		X		
7	BH12_0.3-0.4	########	Soil						
8	BH12_0.5-0.6	########	Soil						
9	BH12_1.0-1.1	########	Soil	X					
10	BH12_1.1-1.2	########	Soil						
11	BH12_2.0-2.1	########	Soil						
12	BH13_0.0-0.1	########	Soil						
13	BH13_0.3-0.4	########	Soil						
14	BH13_0.5-0.6	########	Soil	X	COMP 5	X			
15	BH13_1.1-1.2	########	Soil						
16	BH13_2.0-2.1	########	Soil	X					

Containers:	1LP	250P	125P	1LA	40mL vial	125mL A	Jar

Relinquished By: LT
Date & Time:: 12/02/2021
Signature: LT

Laboratory Staff
Received By: MR
Date & Time: 15/2/21 10:30AM
Signature:

Turn around time
1 DAY ☐ 2 DAY ☒ 3 DAY ☐
5 DAY ☐ 10 DAY ☐ Other: ☐

Method Of Shipment
☒ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1°C
Report number: 774362

eurofins mgt

Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtlabmark.com.au

Brisbane
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Phone: +617 3902 4600
Email: enviro.bris@mgtlabmark.com.au

Melbourne
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD	Contact Name:	Ruth Madden	Purchase Order :	12545790
Office Address :	Level 3, 24 Honeysuckle Drive Newcastle	Project Manager :	Ruth Madden	PROJECT Number :	12545790
		Email for results :	ruth.madden@ghd.com	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 6: BH14_0.0-0.1, BH15_0.0-0.1, BH16_0.0-0.1

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS
1	BH14_0.0-0.1	########	Soil	X	COMP 6		
2	BH14_0.5-0.6	########	Soil				
3	BH14_1.0-1.1	########	Soil	X		X	X
4	BH14_1.7-1.8	########	Soil				
5	BH14_2.0-2.1	########	Soil				
6	BH15_0.0-0.1	########	Soil	X	COMP 6		
7	BH15_0.5-0.6	########	Soil				
8	BH15_1.4-1.5	########	Soil	X			
9	BH15_1.6-1.7	########	Soil				
10	BH15_2.0-2.1	########	Soil				
11	BH16_0.0-0.1	########	Soil	X	COMP 6		
12	BH16_0.3-0.4	########	Soil				
13	BH16_0.5-0.6	########	Soil				
14	BH16_1.4-1.5	########	Soil				
15	BH16_1.6-1.7	########	Soil				
16	BH16_1.7-1.8	########	Soil	X			

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Laboratory Staff

Relinquished By:	LT
Date & Time::	12/02/2021
Signature:	LT
Received By:	MR
Date & Time:	15/2/21 10:30AM
Signature:	

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☒ 10 DAY ☐ Other: ☐

Method Of Shipment

☑ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1 °C

Report number: 774362

eurofins mgt

Sydney
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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD
Office Address : Level 3, 24 Honeysuckle Drive Newcastle

Contact Name: Ruth Madden
Project Manager : Ruth Madden
Email for results : ruth.madden@ghd.com

Purchase Order : 12545790
PROJECT Number : 12545790
PROJECT Name :

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS	BTEXN
1	BH16_2.0-2.1	########	Soil					
2	BH17_0.0-0.1	########	Soil					
3	BH17_0.3-0.4	########	Soil	X	COMP 5			
4	BH17_1.0-1.1	########	Soil	X				
5	BH17_1.5-1.6	########	Soil					
6	BH17_2.0-2.1	########	Soil					
7	BH18_0.0-0.1	########	Soil	X				
8	BH18_0.3-0.4	########	Soil	X	COMP 5			
9	BH19_0.0-0.1	########	Soil					
10	BH19_0.3-0.4	########	Soil	X	COMP 5		X	
11	BH19_1.1-1.2	########	Soil	X			X	
12	BH19_1.5-1.6	########	Soil					
13	BH19_2.0-2.1	########	Soil					
14	FD03	########	Soil	X				
15	FD04	########	Soil	X				
16	TS02	########	Soil					X

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Relinquished By: LT
Date & Time:: 12/02/2021
Signature: LT

Laboratory Staff
Received By: MR
Date & Time: 15/2/21 10:30 AM
Signature:

Turn around time
1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☒ 10 DAY ☐ Other:

Method Of Shipment
☑ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1°C
Report number: 774362

eurofins mgt

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Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD
Office Address : Level 3, 24 Honeysuckle Drive Newcastle

Contact Name: Ruth Madden
Project Manager : Ruth Madden
Email for results : ruth.madden@ghd.com

Purchase Order : 12545790
PROJECT Number : 12545790
PROJECT Name :

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS	BTEXN
1	TB02	12/02/2021	Soil					X
2	FD01	11/02/2021	Soil	X				
3	FD02	11/02/2021	Soil	X				
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

Analytes

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Relinquished By: LT
Date & Time:: 12/02/2021
Signature: LT

Laboratory Staff
Received By: MR
Date & Time: 15/2/21 10:30AM
Signature:

Turn around time
1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☒ 10 DAY ☐ Other: ☐

Method Of Shipment
☒ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1°C
Report number: 774362

#AU04_Enviro_Sample_NSW

From: Ruth Madden <Ruth.Madden@ghd.com>
Sent: Wednesday, 17 February 2021 9:16 AM
To: #AU04_Enviro_Sample_NSW
Subject: RE: ATTN: Eurofins - Report 774362 : Site 12545790

Follow Up Flag: Follow up
Flag Status: Flagged

Hello,

The priority should be – B7, B13 then asbestos. B13 are composite samples so hopefully you have enough for that? Please analyse TS01 and TB01 for BTEXN.

Thanks,

Ruth

From: EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>
Sent: Tuesday, 16 February 2021 10:24 PM
To: Ruth Madden <Ruth.Madden@ghd.com>
Subject: ATTN: Eurofins - Report 774362 : Site 12545790

Dear Valued Client,

Some sample jars have been received less than half full (and without Asbestos bags), please be advised that there is a possibility that some samples may not be processed for requested analyses due to insufficient amount of sample. Please advise what analysis to prioritise between B7, B13 and Asbestos. Sample BH12_1.0-1.1 not received, analysis cancelled. Samples TS01 and TB01 received as extra, logged on hold.

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins Analytical Services Manager as soon as possible to make certain that they get changed.

Kind regards,
Mickael Ros
Sample Receipt

Eurofins | Environmental Testing
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone: +61 02 9900 8421
Email: EnviroSampleNSW@eurofins.com
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eurofins | Environment Testing

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NATA # 1261 Site # 20794

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Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	GHD Pty Ltd NEWCASTLE
Contact name:	Ruth Madden
Project name:	Not provided
Project ID:	12545790
Turnaround time:	5 Day
Date/Time received	Feb 15, 2021 10:30 AM
Eurofins reference	774362

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 21.1 degrees Celsius.
✗	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
✗	Split sample sent to requested external lab.
✗	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Some sample jars have been received less than half full (and without Asbestos bags), please be advised that there is a possibility that some samples may not be processed for requested analyses due to insufficient amount of sample. Please advise what analysis to prioritise between B7, B13 and Asbestos. Sample BH12_1.0-1.1 not received, analysis cancelled. Received only 2x PFAS tubs for samples BH_0.0-0.1 and BH12_1-1.1 that were not booked for PFAS analysis (kept on hold), other PFAS analyses cancelled.

Contact

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

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Ruth Madden - ruth.madden@ghd.com.

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

eurofins | Environment Testing

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

Australia

Melbourne
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Sydney
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NATA # 1261 Site # 20794

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New Zealand

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Penrose, Auckland 1061
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IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	BH01_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31894	X						X	X		
2	BH01_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31895							X	X		
3	BH02_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31897							X	X		
4	BH02_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31898							X	X		
5	BH03_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31899							X	X		
6	BH03_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31900							X	X		
7	BH04_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31901	X						X	X		
8	BH04_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31902		X								
9	BH04_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31903							X	X		

eurofins | Environment Testing

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

Australia

Melbourne
6 Monterey Road
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Site # 1254 & 14271

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Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
10	BH05_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31904							X	X		
11	BH05_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31905							X	X		
12	BH06_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31906							X	X		
13	BH06_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31907							X	X		
14	BH07_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31908	X						X	X		
15	BH07_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31909							X	X		
16	BH08_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31910							X	X		
17	BH08_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31911							X	X		
18	BH09_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31912	X						X	X		
19	BH09_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31913							X	X		
20	BH10_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31914	X						X	X		

eurofins | Environment Testing

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

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IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
21	BH10_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31915							X	X		
22	BH11_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31916							X	X		
23	BH11_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31917							X	X		
24	BH12_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31918							X	X		
25	BH12_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31919			X							
26	BH13_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31920	X						X	X		
27	BH13_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31921							X	X		
28	BH14_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31922							X	X		
29	BH14_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31923	X						X	X		
30	BH15_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31924							X	X		
31	BH15_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31925							X	X		

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Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
32	BH16_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31926							X	X		
33	BH16_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31927							X	X		
34	BH17_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31928							X	X		
35	BH17_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31929							X	X		
36	BH18_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31930							X	X		
37	BH18_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31931							X	X		
38	BH19_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31932							X	X		
39	BH19_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31933							X	X		
40	FD03	Feb 12, 2021		Soil	S21-Fe31934							X	X		
41	FD04	Feb 12, 2021		Soil	S21-Fe31935							X	X		
42	TS02	Feb 08, 2021		Soil	S21-Fe31936										X

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
43	TB02	Feb 08, 2021		Soil	S21-Fe31938				X						
44	FD01	Feb 11, 2021		Soil	S21-Fe31939							X	X		
45	FD02	Feb 11, 2021		Soil	S21-Fe31940							X	X		
46	COMPOSITE 1	Feb 11, 2021		Soil	S21-Fe31941					X		X			
47	COMPOSITE 2	Feb 11, 2021		Soil	S21-Fe31942					X		X			
48	COMPOSITE 3	Feb 11, 2021		Soil	S21-Fe31943					X		X			
49	COMPOSITE 4	Feb 12, 2021		Soil	S21-Fe31944					X		X			
50	COMPOSITE	Feb 12, 2021		Soil	S21-Fe31945					X		X			

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
	5														
51	COMPOSITE 6	Feb 12, 2021		Soil	S21-Fe31946					X		X			
52	BH01_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31947			X							
53	BH02_0.6-0.7	Feb 11, 2021		Soil	S21-Fe31948			X							
54	BH02_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31949			X							
55	BH03_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31950			X							
56	BH03_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31951			X							
57	BH03_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31952			X							
58	BH04_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31953			X							
59	BH04_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31954			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
60	BH05_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31955			X							
61	BH05_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31956			X							
62	BH05_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31957			X							
63	BH06_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31958			X							
64	BH06_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31959			X							
65	BH06_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31960			X							
66	BH07_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31961			X							
67	BH07_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31962			X							
68	BH07_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31963			X							
69	BH08_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31964			X							
70	BH08_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31965			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
71	BH08_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31966			X							
72	BH09_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31967			X							
73	BH09_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31968			X							
74	BH09_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31969			X							
75	BH10_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31970			X							
76	BH10_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31971			X							
77	BH10_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31972			X							
78	BH11_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31973			X							
79	BH11_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31974			X							
80	BH11_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31975			X							
81	BH12_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31976			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
82	BH12_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31977			X							
83	BH12_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31978			X							
84	BH12_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31979			X							
85	BH13_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31980			X							
86	BH13_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31981			X							
87	BH13_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31982			X							
88	BH14_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31983			X							
89	BH14_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31984			X							
90	BH14_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31985			X							
91	BH15_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31986			X							
92	BH15_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31987			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
93	BH15_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31988			X							
94	BH16_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31989			X							
95	BH16_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31990			X							
96	BH16_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31991			X							
97	BH16_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31992			X							
98	BH16_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31993			X							
99	BH17_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31994			X							
100	BH17_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31995			X							
101	BH17_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31996			X							
102	BH19_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31997			X							
103	BH19_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31998			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
104	BH19_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31999			X							
105	TS01	Feb 08, 2021		Soil	S21-Fe32000									X	
106	TB01	Feb 08, 2021		Soil	S21-Fe32001						X				
107	BH_0.0-0.1	Feb 08, 2021		Soil	S21-Fe41426			X							
Test Counts						7	1	55	1	6	1	47	41	1	1

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention:	Ruth Madden
Report	774362-AID
Project Name	
Project ID	12545790
Received Date	Feb 15, 2021
Date Reported	Feb 23, 2021

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name
Project ID 12545790
Date Sampled Feb 11, 2021 to Feb 12, 2021
Report 774362-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH01_0.0-0.1	21-Fe31894	Feb 11, 2021	Approximate Sample 62g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH04_0.3-0.4	21-Fe31901	Feb 11, 2021	Approximate Sample 7g Sample consisted of: Brown coarse-grained soil, bitumen like material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH07_0.0-0.1	21-Fe31908	Feb 11, 2021	Approximate Sample 36g Sample consisted of: Brown coarse-grained sandy soil, concrete, cement, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH09_0.3-0.4	21-Fe31912	Feb 11, 2021	Approximate Sample 34g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH10_0.3-0.4	21-Fe31914	Feb 12, 2021	Approximate Sample 23g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH13_0.5-0.6	21-Fe31920	Feb 12, 2021	Approximate Sample 18g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH14_1.0-1.1	21-Fe31923	Feb 12, 2021	Approximate Sample 24g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Feb 16, 2021	Indefinite

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Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	BH01_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31894	X						X	X		
2	BH01_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31895							X	X		
3	BH02_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31897							X	X		
4	BH02_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31898							X	X		
5	BH03_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31899							X	X		
6	BH03_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31900							X	X		
7	BH04_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31901	X						X	X		
8	BH04_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31902		X								
9	BH04_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31903							X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
10	BH05_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31904							X	X		
11	BH05_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31905							X	X		
12	BH06_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31906							X	X		
13	BH06_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31907							X	X		
14	BH07_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31908	X						X	X		
15	BH07_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31909							X	X		
16	BH08_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31910							X	X		
17	BH08_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31911							X	X		
18	BH09_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31912	X						X	X		
19	BH09_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31913							X	X		
20	BH10_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31914	X						X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
21	BH10_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31915							X	X		
22	BH11_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31916							X	X		
23	BH11_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31917							X	X		
24	BH12_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31918							X	X		
25	BH12_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31919			X							
26	BH13_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31920	X						X	X		
27	BH13_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31921							X	X		
28	BH14_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31922							X	X		
29	BH14_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31923	X						X	X		
30	BH15_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31924							X	X		
31	BH15_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31925							X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
32	BH16_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31926							X	X		
33	BH16_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31927							X	X		
34	BH17_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31928							X	X		
35	BH17_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31929							X	X		
36	BH18_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31930							X	X		
37	BH18_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31931							X	X		
38	BH19_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31932							X	X		
39	BH19_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31933							X	X		
40	FD03	Feb 12, 2021		Soil	S21-Fe31934							X	X		
41	FD04	Feb 12, 2021		Soil	S21-Fe31935							X	X		
42	TS02	Feb 08, 2021		Soil	S21-Fe31936										X

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
43	TB02	Feb 08, 2021		Soil	S21-Fe31938				X						
44	FD01	Feb 11, 2021		Soil	S21-Fe31939							X	X		
45	FD02	Feb 11, 2021		Soil	S21-Fe31940							X	X		
46	COMPOSITE 1	Feb 11, 2021		Soil	S21-Fe31941					X		X			
47	COMPOSITE 2	Feb 11, 2021		Soil	S21-Fe31942					X		X			
48	COMPOSITE 3	Feb 11, 2021		Soil	S21-Fe31943					X		X			
49	COMPOSITE 4	Feb 12, 2021		Soil	S21-Fe31944					X		X			
50	COMPOSITE	Feb 12, 2021		Soil	S21-Fe31945					X		X			

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
	5														
51	COMPOSITE 6	Feb 12, 2021		Soil	S21-Fe31946					X		X			
52	BH01_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31947			X							
53	BH02_0.6-0.7	Feb 11, 2021		Soil	S21-Fe31948			X							
54	BH02_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31949			X							
55	BH03_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31950			X							
56	BH03_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31951			X							
57	BH03_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31952			X							
58	BH04_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31953			X							
59	BH04_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31954			X							

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
60	BH05_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31955			X							
61	BH05_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31956			X							
62	BH05_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31957			X							
63	BH06_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31958			X							
64	BH06_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31959			X							
65	BH06_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31960			X							
66	BH07_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31961			X							
67	BH07_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31962			X							
68	BH07_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31963			X							
69	BH08_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31964			X							
70	BH08_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31965			X							

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IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
71	BH08_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31966			X							
72	BH09_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31967			X							
73	BH09_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31968			X							
74	BH09_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31969			X							
75	BH10_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31970			X							
76	BH10_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31971			X							
77	BH10_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31972			X							
78	BH11_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31973			X							
79	BH11_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31974			X							
80	BH11_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31975			X							
81	BH12_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31976			X							

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Eurofins Analytical Services Manager : Andrew Black

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
82	BH12_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31977			X							
83	BH12_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31978			X							
84	BH12_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31979			X							
85	BH13_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31980			X							
86	BH13_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31981			X							
87	BH13_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31982			X							
88	BH14_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31983			X							
89	BH14_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31984			X							
90	BH14_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31985			X							
91	BH15_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31986			X							
92	BH15_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31987			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
93	BH15_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31988			X							
94	BH16_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31989			X							
95	BH16_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31990			X							
96	BH16_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31991			X							
97	BH16_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31992			X							
98	BH16_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31993			X							
99	BH17_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31994			X							
100	BH17_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31995			X							
101	BH17_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31996			X							
102	BH19_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31997			X							
103	BH19_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31998			X							

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Eurofins Analytical Services Manager : Andrew Black

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
104	BH19_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31999			X							
105	TS01	Feb 08, 2021		Soil	S21-Fe32000									X	
106	TB01	Feb 08, 2021		Soil	S21-Fe32001						X				
107	BH_0.0-0.1	Feb 08, 2021		Soil	S21-Fe41426			X							
Test Counts						7	1	55	1	6	1	47	41	1	1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to “non-bonded / friable”.
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

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

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Authorised by:

Chamath JHM Annakkage	Senior Analyst-Asbestos (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention: **Ruth Madden**

Report **774362-S**
Project name
Project ID 12545790
Received Date Feb 15, 2021

Client Sample ID			**BH01_0.0-0.1**	**BH01_0.5-0.6**	**BH02_0.3-0.4**	**BH02_1.9-2.0**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S21-Fe31894**	**S21-Fe31895**	**S21-Fe31897**	**S21-Fe31898**
Date Sampled			**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	61	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	61	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	77	97	96	96
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH01_0.0-0.1	BH01_0.5-0.6	BH02_0.3-0.4	BH02_1.9-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31894	S21-Fe31895	S21-Fe31897	S21-Fe31898
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	1.6	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	51	78	76	81
p-Terphenyl-d14 (surr.)	1	%	77	78	76	82
Heavy Metals						
Arsenic	2	mg/kg	10	3.6	5.0	6.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	23	< 5	44	6.8
Copper	5	mg/kg	35	< 5	48	< 5
Lead	5	mg/kg	41	< 5	81	< 5
Mercury	0.1	mg/kg	0.1	< 0.1	0.3	< 0.1
Nickel	5	mg/kg	20	< 5	45	5.7
Zinc	5	mg/kg	60	< 5	80	11
% Moisture	1	%	13	9.1	14	23

Client Sample ID			BH03_0.0-0.1	BH03_0.5-0.6	BH04_0.3-0.4	BH04_1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31899	S21-Fe31900	S21-Fe31901	S21-Fe31903
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	190	< 20
TRH C15-C28	50	mg/kg	64	< 50	690	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	64	< 50	880	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	0.3	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	1.5	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	0.5	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	2.0	< 0.3
4-Bromofluorobenzene (surr.)	1	%	87	84	100	100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	3.6	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	320	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	316.4	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	660	< 100

Client Sample ID			BH03_0.0-0.1	BH03_0.5-0.6	BH04_0.3-0.4	BH04_1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31899	S21-Fe31900	S21-Fe31901	S21-Fe31903
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	980	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.2	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.5	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	1.5	< 0.5	0.7	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	3.9	< 0.5
Phenanthrene	0.5	mg/kg	0.8	< 0.5	1.5	< 0.5
Pyrene	0.5	mg/kg	1.4	< 0.5	0.5	< 0.5
Total PAH*	0.5	mg/kg	7	< 0.5	6.6	< 0.5
2-Fluorobiphenyl (surr.)	1	%	76	66	70	85
p-Terphenyl-d14 (surr.)	1	%	77	65	69	83
Heavy Metals						
Arsenic	2	mg/kg	13	7.7	700	3.9
Cadmium	0.4	mg/kg	2.6	< 0.4	2.2	< 0.4
Chromium	5	mg/kg	22	54	77	< 5
Copper	5	mg/kg	91	57	1900	< 5
Lead	5	mg/kg	330	59	1400	6.8
Mercury	0.1	mg/kg	0.2	0.2	< 0.1	< 0.1
Nickel	5	mg/kg	18	47	56	< 5
Zinc	5	mg/kg	950	86	18000	25
% Moisture	1	%	16	12	10	8.0

Client Sample ID			BH05_0.3-0.4	BH05_1.0-1.1	BH06_0.0-0.1	BH06_1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31904	S21-Fe31905	S21-Fe31906	S21-Fe31907
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50

Client Sample ID			BH05_0.3-0.4	BH05_1.0-1.1	BH06_0.0-0.1	BH06_1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31904	S21-Fe31905	S21-Fe31906	S21-Fe31907
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	98	86	89	96
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	75	77	71	67
p-Terphenyl-d14 (surr.)	1	%	76	78	77	70
Heavy Metals						
Arsenic	2	mg/kg	4.5	8.4	4.1	3.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	63	11	< 5
Copper	5	mg/kg	< 5	74	14	< 5
Lead	5	mg/kg	6.0	35	13	< 5
Mercury	0.1	mg/kg	< 0.1	0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	47	8.0	< 5
Zinc	5	mg/kg	30	100	42	6.7
% Moisture	1	%	7.3	26	27	6.9

Client Sample ID			BH07_0.0-0.1	BH07_0.5-0.6	BH08_0.0-0.1	BH08_2.0-2.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31908	S21-Fe31909	S21-Fe31910	S21-Fe31911
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	97	94	80	85
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	76	76	79	67
p-Terphenyl-d14 (surr.)	1	%	79	78	83	72

Client Sample ID			BH07_0.0-0.1	BH07_0.5-0.6	BH08_0.0-0.1	BH08_2.0-2.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31908	S21-Fe31909	S21-Fe31910	S21-Fe31911
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.4	3.5	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	< 5	< 5	< 5
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	7.2	< 5	< 5	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	25	5.0	< 5	< 5
% Moisture	1	%	5.4	6.4	15	11

Client Sample ID			BH09_0.3-0.4	BH09_1.0-1.1	BH10_0.3-0.4	BH10_1.3-1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31912	S21-Fe31913	S21-Fe31914	S21-Fe31915
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	52	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	52	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	84	87	100	87
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH09_0.3-0.4	BH09_1.0-1.1	BH10_0.3-0.4	BH10_1.3-1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31912	S21-Fe31913	S21-Fe31914	S21-Fe31915
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	2.1	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	65	79	69	76
p-Terphenyl-d14 (surr.)	1	%	76	82	74	86
Heavy Metals						
Arsenic	2	mg/kg	11	3.2	3.6	10
Cadmium	0.4	mg/kg	0.5	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	6.9	< 5	< 5	52
Copper	5	mg/kg	27	< 5	< 5	64
Lead	5	mg/kg	63	< 5	< 5	31
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1
Nickel	5	mg/kg	6.7	< 5	< 5	39
Zinc	5	mg/kg	180	< 5	< 5	130
% Moisture	1	%	3.3	7.3	2.5	29

Client Sample ID			BH11_0.0-0.1	BH11_0.5-0.6	BH12_0.0-0.1	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31916	S21-Fe31917	S21-Fe31918	S21-Fe31920
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	95	< 50	80	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	95	< 50	80	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	89	80	97	105

Client Sample ID			BH11_0.0-0.1	BH11_0.5-0.6	BH12_0.0-0.1	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31916	S21-Fe31917	S21-Fe31918	S21-Fe31920
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	160	< 100	150	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	160	< 100	150	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	3.1	< 0.5	1.3	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	3.4	0.6	1.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.6	1.2	1.8	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	2.2	< 0.5	0.9	< 0.5
Benzo(a)pyrene	0.5	mg/kg	2.3	< 0.5	1.0	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	2.2	< 0.5	0.9	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	1.9	< 0.5	0.8	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	2.0	< 0.5	0.8	< 0.5
Chrysene	0.5	mg/kg	1.8	< 0.5	0.8	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	4.6	< 0.5	1.9	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	1.5	< 0.5	0.7	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	1.4	< 0.5	0.8	< 0.5
Pyrene	0.5	mg/kg	4.4	< 0.5	1.8	< 0.5
Total PAH*	0.5	mg/kg	24.3	< 0.5	10.4	< 0.5
2-Fluorobiphenyl (surr.)	1	%	74	69	80	73
p-Terphenyl-d14 (surr.)	1	%	77	69	73	70
Heavy Metals						
Arsenic	2	mg/kg	5.5	4.0	5.8	3.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	120	< 5	43	< 5
Copper	5	mg/kg	28	< 5	31	< 5
Lead	5	mg/kg	44	< 5	36	10
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	10	< 5	18	< 5
Zinc	5	mg/kg	100	< 5	140	28
% Moisture	1	%	9.4	9.9	7.3	8.4

Client Sample ID			BH13_2.0-2.1	BH14_0.0-0.1	BH14_1.0-1.1	BH15_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31921	S21-Fe31922	S21-Fe31923	S21-Fe31924
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 100
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	170
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	170
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.5
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 1
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.5
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 1.5
4-Bromofluorobenzene (surr.)	1	%	84	83	71	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 2.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 100
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 100
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	190
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	190
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	0.7	< 0.5	0.6
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	1.0	0.6	0.9
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.3	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	0.6	< 0.5	0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	0.6	< 0.5	0.7
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	1.0	< 0.5	1.0
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	1.0	< 0.5	0.9
Total PAH*	0.5	mg/kg	< 0.5	4.2	< 0.5	3.1
2-Fluorobiphenyl (surr.)	1	%	81	85	77	69
p-Terphenyl-d14 (surr.)	1	%	81	79	76	88

Client Sample ID			BH13_2.0-2.1	BH14_0.0-0.1	BH14_1.0-1.1	BH15_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31921	S21-Fe31922	S21-Fe31923	S21-Fe31924
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.6	5.6	< 2	8.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	6.3	31	< 5	34
Copper	5	mg/kg	23	25	< 5	31
Lead	5	mg/kg	29	45	< 5	55
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	5.1	18	< 5	17
Zinc	5	mg/kg	33	160	8.8	150
% Moisture	1	%	22	8.4	13	9.9

Client Sample ID			BH15_1.4-1.5	BH16_0.0-0.1	BH16_1.7-1.8	BH17_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31925	S21-Fe31926	S21-Fe31927	S21-Fe31928
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 100	< 100	< 20
TRH C10-C14	20	mg/kg	< 20	< 100	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 250	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 250	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 250	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.5	< 0.5	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.5	< 0.5	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.5	< 0.5	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 1	< 1	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.5	< 0.5	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 1.5	< 1.5	< 0.3
4-Bromofluorobenzene (surr.)	1	%	77	INT	72	84
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 2.5	< 2.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 100	< 100	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 100	< 100	< 20
TRH >C10-C16	50	mg/kg	< 50	< 250	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 250	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 500	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 500	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 500	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH15_1.4-1.5	BH16_0.0-0.1	BH16_1.7-1.8	BH17_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31925	S21-Fe31926	S21-Fe31927	S21-Fe31928
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	1.0	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	1.0	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	2	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	77	80	66	67
p-Terphenyl-d14 (surr.)	1	%	105	88	81	80
Heavy Metals						
Arsenic	2	mg/kg	6.3	8.1	5.6	4.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.8	14	8.2	< 5
Copper	5	mg/kg	13	17	63	20
Lead	5	mg/kg	13	18	16	8.3
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.2	7.2	7.2	< 5
Zinc	5	mg/kg	44	74	46	100
% Moisture	1	%	15	9.2	15	3.6

Client Sample ID			BH17_1.0-1.1	BH18_0.0-0.1	BH18_0.3-0.4	BH19_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31929	S21-Fe31930	S21-Fe31931	S21-Fe31932
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 100	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 100	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 250	75	< 50
TRH C29-C36	50	mg/kg	< 50	< 250	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 250	75	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.5	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.5	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.5	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 1	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.5	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 1.5	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	79	88	68	75

Client Sample ID			BH17_1.0-1.1	BH18_0.0-0.1	BH18_0.3-0.4	BH19_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31929	S21-Fe31930	S21-Fe31931	S21-Fe31932
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 2.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 100	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 100	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 250	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 250	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 500	110	< 100
TRH >C34-C40	100	mg/kg	< 100	< 500	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 500	110	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.5	< 0.5	< 2.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.7	0.6	3.0	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	2.0	1.2	6.1	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	1.1	< 0.5	< 2.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	1.1	< 0.5	< 2.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.0	< 0.5	< 2.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	0.7	< 0.5	< 2.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	0.8	< 0.5	< 2.5	< 0.5
Chrysene	0.5	mg/kg	0.8	< 0.5	< 2.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Fluoranthene	0.5	mg/kg	1.6	< 0.5	< 2.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	0.7	< 0.5	< 2.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Phenanthrene	0.5	mg/kg	0.6	< 0.5	< 2.5	< 0.5
Pyrene	0.5	mg/kg	1.6	< 0.5	< 2.5	< 0.5
Total PAH*	0.5	mg/kg	10	< 0.5	< 2.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	68	66	71	71
p-Terphenyl-d14 (surr.)	1	%	84	81	77	86
Heavy Metals						
Arsenic	2	mg/kg	7.3	3.6	3.8	5.4
Cadmium	0.4	mg/kg	0.7	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	20	33	32	20
Copper	5	mg/kg	410	21	20	16
Lead	5	mg/kg	140	21	21	21
Mercury	0.1	mg/kg	0.4	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	17	20	26	< 5
Zinc	5	mg/kg	280	80	50	80
% Moisture	1	%	14	5.6	7.3	4.0

Client Sample ID			BH19_1.1-1.2	FD03	FD04	TS02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31933	S21-Fe31934	S21-Fe31935	S21-Fe31936
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 08, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	80	69	71	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	63	70	61	-
p-Terphenyl-d14 (surr.)	1	%	76	89	79	-

Client Sample ID			BH19_1.1-1.2	FD03	FD04	TS02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31933	S21-Fe31934	S21-Fe31935	S21-Fe31936
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 08, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	11	3.7	4.1	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	< 5	< 5	< 5	-
Copper	5	mg/kg	< 5	< 5	21	-
Lead	5	mg/kg	< 5	7.1	14	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	< 5	< 5	< 5	-
Zinc	5	mg/kg	< 5	18	97	-
% Moisture	1	%	4.6	3.4	3.4	-
BTEX						
Benzene	1	%	-	-	-	110
Ethylbenzene	1	%	-	-	-	120
m&p-Xylenes	1	%	-	-	-	120
o-Xylene	1	%	-	-	-	120
Toluene	1	%	-	-	-	110
Xylenes - Total	1	%	-	-	-	120
4-Bromofluorobenzene (surr.)	1	%	-	-	-	72

Client Sample ID			TB02	FD01	FD02	COMPOSITE 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31938	S21-Fe31939	S21-Fe31940	S21-Fe31941
Date Sampled			Feb 08, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	-
TRH C10-C14	20	mg/kg	-	< 20	< 20	-
TRH C15-C28	50	mg/kg	-	< 50	< 50	-
TRH C29-C36	50	mg/kg	-	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	-	< 50	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	72	67	68	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	-	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	-
TRH >C10-C16	50	mg/kg	-	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	-
TRH >C16-C34	100	mg/kg	-	< 100	< 100	-
TRH >C34-C40	100	mg/kg	-	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	-

Client Sample ID			TB02	FD01	FD02	COMPOSITE 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31938	S21-Fe31939	S21-Fe31940	S21-Fe31941
Date Sampled			Feb 08, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	-
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	-	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	84	78	-
p-Terphenyl-d14 (surr.)	1	%	-	82	89	-
Heavy Metals						
Arsenic	2	mg/kg	-	6.5	4.0	-
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4	-
Chromium	5	mg/kg	-	8.5	< 5	-
Copper	5	mg/kg	-	< 5	< 5	-
Lead	5	mg/kg	-	< 5	< 5	-
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	-
Nickel	5	mg/kg	-	5.9	< 5	-
Zinc	5	mg/kg	-	12	8.0	-
% Moisture	1	%	-	20	5.6	18
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	-	< 0.05
a-BHC	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
b-BHC	0.05	mg/kg	-	-	-	< 0.05
d-BHC	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05

Client Sample ID			TB02	FD01	FD02	COMPOSITE 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31938	S21-Fe31939	S21-Fe31940	S21-Fe31941
Date Sampled			Feb 08, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
g-BHC (Lindane)	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.2	mg/kg	-	-	-	< 0.2
Toxaphene	0.1	mg/kg	-	-	-	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	-	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	-	< 0.2
Dibutylchlorendate (surr.)	1	%	-	-	-	138
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	111
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1242	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1248	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1254	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	-	< 0.5
Total PCB*	0.5	mg/kg	-	-	-	< 0.5
Dibutylchlorendate (surr.)	1	%	-	-	-	138
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	111

Client Sample ID			COMPOSITE 2	COMPOSITE 3	COMPOSITE 4	COMPOSITE 5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31942	S21-Fe31943	S21-Fe31944	S21-Fe31945
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
% Moisture	1	%	11	9.5	7.0	5.4
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			COMPOSITE 2	COMPOSITE 3	COMPOSITE 4	COMPOSITE 5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31942	S21-Fe31943	S21-Fe31944	S21-Fe31945
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	127	110	63	68
Tetrachloro-m-xylene (surr.)	1	%	101	95	89	89
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	127	110	63	68
Tetrachloro-m-xylene (surr.)	1	%	101	95	89	89

Client Sample ID			COMPOSITE 6	TS01	TB01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31946	S21-Fe32000	S21-Fe32001
Date Sampled			Feb 12, 2021	Feb 08, 2021	Feb 08, 2021
Test/Reference	LOR	Unit			
BTEX					
Benzene	0.1	mg/kg	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1
Xylenes - Total*	0.3	mg/kg	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	68
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5
% Moisture	1	%	8.2	-	-
BTEX					
Benzene	1	%	-	110	-
Ethylbenzene	1	%	-	130	-
m&p-Xylenes	1	%	-	130	-
o-Xylene	1	%	-	130	-
Toluene	1	%	-	110	-
Xylenes - Total	1	%	-	130	-
4-Bromofluorobenzene (surr.)	1	%	-	58	-

Client Sample ID			COMPOSITE 6	TS01	TB01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31946	S21-Fe32000	S21-Fe32001
Date Sampled			Feb 12, 2021	Feb 08, 2021	Feb 08, 2021
Test/Reference	LOR	Unit			
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-
Methoxychlor	0.2	mg/kg	< 0.2	-	-
Toxaphene	0.1	mg/kg	< 0.1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	-	-
Dibutylchlorendate (surr.)	1	%	69	-	-
Tetrachloro-m-xylene (surr.)	1	%	84	-	-
Polychlorinated Biphenyls					
Aroclor-1016	0.5	mg/kg	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	-
Total PCB*	0.5	mg/kg	< 0.5	-	-
Dibutylchlorendate (surr.)	1	%	69	-	-
Tetrachloro-m-xylene (surr.)	1	%	84	-	-
Total Recoverable Hydrocarbons					
Naphthalene	1	%	-	120	-

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Feb 19, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Feb 16, 2021	14 Days
- Method: LTM-GEN-7080 Moisture			
Organochlorine Pesticides	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Feb 19, 2021	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			

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Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	BH01_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31894	X						X	X		
2	BH01_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31895							X	X		
3	BH02_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31897							X	X		
4	BH02_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31898							X	X		
5	BH03_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31899							X	X		
6	BH03_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31900							X	X		
7	BH04_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31901	X						X	X		
8	BH04_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31902		X								
9	BH04_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31903							X	X		

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Company Name: GHD Pty Ltd NEWCASTLE
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NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
10	BH05_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31904							X	X		
11	BH05_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31905							X	X		
12	BH06_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31906							X	X		
13	BH06_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31907							X	X		
14	BH07_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31908	X						X	X		
15	BH07_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31909							X	X		
16	BH08_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31910							X	X		
17	BH08_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31911							X	X		
18	BH09_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31912	X						X	X		
19	BH09_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31913							X	X		
20	BH10_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31914	X						X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
21	BH10_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31915							X	X		
22	BH11_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31916							X	X		
23	BH11_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31917							X	X		
24	BH12_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31918							X	X		
25	BH12_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31919			X							
26	BH13_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31920	X						X	X		
27	BH13_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31921							X	X		
28	BH14_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31922							X	X		
29	BH14_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31923	X						X	X		
30	BH15_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31924							X	X		
31	BH15_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31925							X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
32	BH16_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31926							X	X		
33	BH16_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31927							X	X		
34	BH17_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31928							X	X		
35	BH17_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31929							X	X		
36	BH18_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31930							X	X		
37	BH18_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31931							X	X		
38	BH19_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31932							X	X		
39	BH19_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31933							X	X		
40	FD03	Feb 12, 2021		Soil	S21-Fe31934							X	X		
41	FD04	Feb 12, 2021		Soil	S21-Fe31935							X	X		
42	TS02	Feb 08, 2021		Soil	S21-Fe31936										X

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
43	TB02	Feb 08, 2021		Soil	S21-Fe31938				X						
44	FD01	Feb 11, 2021		Soil	S21-Fe31939							X	X		
45	FD02	Feb 11, 2021		Soil	S21-Fe31940							X	X		
46	COMPOSITE 1	Feb 11, 2021		Soil	S21-Fe31941					X		X			
47	COMPOSITE 2	Feb 11, 2021		Soil	S21-Fe31942					X		X			
48	COMPOSITE 3	Feb 11, 2021		Soil	S21-Fe31943					X		X			
49	COMPOSITE 4	Feb 12, 2021		Soil	S21-Fe31944					X		X			
50	COMPOSITE	Feb 12, 2021		Soil	S21-Fe31945					X		X			

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
	5														
51	COMPOSITE 6	Feb 12, 2021		Soil	S21-Fe31946					X		X			
52	BH01_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31947			X							
53	BH02_0.6-0.7	Feb 11, 2021		Soil	S21-Fe31948			X							
54	BH02_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31949			X							
55	BH03_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31950			X							
56	BH03_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31951			X							
57	BH03_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31952			X							
58	BH04_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31953			X							
59	BH04_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31954			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
60	BH05_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31955			X							
61	BH05_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31956			X							
62	BH05_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31957			X							
63	BH06_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31958			X							
64	BH06_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31959			X							
65	BH06_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31960			X							
66	BH07_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31961			X							
67	BH07_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31962			X							
68	BH07_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31963			X							
69	BH08_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31964			X							
70	BH08_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31965			X							

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
71	BH08_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31966			X							
72	BH09_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31967			X							
73	BH09_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31968			X							
74	BH09_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31969			X							
75	BH10_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31970			X							
76	BH10_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31971			X							
77	BH10_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31972			X							
78	BH11_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31973			X							
79	BH11_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31974			X							
80	BH11_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31975			X							
81	BH12_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31976			X							

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
82	BH12_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31977			X							
83	BH12_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31978			X							
84	BH12_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31979			X							
85	BH13_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31980			X							
86	BH13_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31981			X							
87	BH13_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31982			X							
88	BH14_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31983			X							
89	BH14_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31984			X							
90	BH14_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31985			X							
91	BH15_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31986			X							
92	BH15_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31987			X							

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Company Name: GHD Pty Ltd NEWCASTLE
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Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
93	BH15_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31988			X							
94	BH16_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31989			X							
95	BH16_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31990			X							
96	BH16_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31991			X							
97	BH16_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31992			X							
98	BH16_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31993			X							
99	BH17_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31994			X							
100	BH17_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31995			X							
101	BH17_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31996			X							
102	BH19_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31997			X							
103	BH19_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31998			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
104	BH19_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31999			X							
105	TS01	Feb 08, 2021		Soil	S21-Fe32000									X	
106	TB01	Feb 08, 2021		Soil	S21-Fe32001						X				
107	BH_0.0-0.1	Feb 08, 2021		Soil	S21-Fe41426			X							
Test Counts						7	1	55	1	6	1	47	41	1	1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

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

Units

mg/kg: milligrams per kilogram | **mg/L:** milligrams per litre | **ug/L:** micrograms per litre

ppm: Parts per million | **ppb:** Parts per billion | **%:** Percentage

org/100mL: Organisms per 100 millilitres | **NTU:** Nephelometric Turbidity Units | **MPN/100mL:** Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Organochlorine Pesticides							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	86			70-130	Pass	
TRH C10-C14	%	77			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	102			70-130	Pass	
Toluene	%	111			70-130	Pass	
Ethylbenzene	%	105			70-130	Pass	
m&p-Xylenes	%	100			70-130	Pass	
o-Xylene	%	101			70-130	Pass	
Xylenes - Total*	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	108			70-130	Pass	
Naphthalene	%	98			70-130	Pass	
TRH C6-C10	%	84			70-130	Pass	
TRH >C10-C16	%	77			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	82			70-130	Pass	
Acenaphthylene	%	79			70-130	Pass	
Anthracene	%	79			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	%	83			70-130	Pass	
Benzo(a)pyrene	%	85			70-130	Pass	
Benzo(b&j)fluoranthene	%	70			70-130	Pass	
Benzo(g.h.i)perylene	%	84			70-130	Pass	
Benzo(k)fluoranthene	%	84			70-130	Pass	
Chrysene	%	71			70-130	Pass	
Dibenz(a.h)anthracene	%	84			70-130	Pass	
Fluoranthene	%	79			70-130	Pass	
Fluorene	%	76			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	80			70-130	Pass	
Naphthalene	%	81			70-130	Pass	
Phenanthrene	%	80			70-130	Pass	
Pyrene	%	81			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	101			80-120	Pass	
Cadmium	%	100			80-120	Pass	
Chromium	%	103			80-120	Pass	
Copper	%	104			80-120	Pass	
Lead	%	100			80-120	Pass	
Mercury	%	100			80-120	Pass	
Nickel	%	106			80-120	Pass	
Zinc	%	101			80-120	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	111			70-130	Pass	
4.4'-DDD	%	110			70-130	Pass	
4.4'-DDE	%	129			70-130	Pass	
4.4'-DDT	%	128			70-130	Pass	
a-BHC	%	110			70-130	Pass	
Aldrin	%	113			70-130	Pass	
b-BHC	%	116			70-130	Pass	
d-BHC	%	111			70-130	Pass	
Dieldrin	%	109			70-130	Pass	
Endosulfan I	%	113			70-130	Pass	
Endosulfan II	%	107			70-130	Pass	
Endosulfan sulphate	%	98			70-130	Pass	
Endrin	%	109			70-130	Pass	
Endrin aldehyde	%	113			70-130	Pass	
Endrin ketone	%	118			70-130	Pass	
g-BHC (Lindane)	%	119			70-130	Pass	
Heptachlor	%	117			70-130	Pass	
Heptachlor epoxide	%	111			70-130	Pass	
Hexachlorobenzene	%	108			70-130	Pass	
Methoxychlor	%	120			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	129			70-130	Pass	
Aroclor-1260	%	127			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S21-Fe27496	NCP	%	80			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S21-Fe27496	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S21-Fe31913	CP	%	79			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S21-Fe31913	CP	%	95			70-130	Pass	
Toluene	S21-Fe31913	CP	%	96			70-130	Pass	
Ethylbenzene	S21-Fe31913	CP	%	98			70-130	Pass	
m&p-Xylenes	S21-Fe31913	CP	%	95			70-130	Pass	
o-Xylene	S21-Fe31913	CP	%	99			70-130	Pass	
Xylenes - Total*	S21-Fe31913	CP	%	97			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S21-Fe31913	CP	%	100			70-130	Pass	
TRH C6-C10	S21-Fe31913	CP	%	79			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S21-Fe31913	CP	%	88			70-130	Pass	
Acenaphthylene	S21-Fe31913	CP	%	85			70-130	Pass	
Anthracene	S21-Fe31913	CP	%	84			70-130	Pass	
Benz(a)anthracene	S21-Fe31913	CP	%	90			70-130	Pass	
Benzo(a)pyrene	S21-Fe31913	CP	%	91			70-130	Pass	
Benzo(g.h.i)perylene	S21-Fe31913	CP	%	88			70-130	Pass	
Benzo(k)fluoranthene	S21-Fe31913	CP	%	85			70-130	Pass	
Chrysene	S21-Fe31913	CP	%	75			70-130	Pass	
Dibenz(a.h)anthracene	S21-Fe31913	CP	%	84			70-130	Pass	
Fluoranthene	S21-Fe31913	CP	%	86			70-130	Pass	
Fluorene	S21-Fe31913	CP	%	81			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31913	CP	%	93			70-130	Pass	
Naphthalene	S21-Fe31913	CP	%	87			70-130	Pass	
Phenanthrene	S21-Fe31913	CP	%	84			70-130	Pass	
Pyrene	S21-Fe31913	CP	%	86			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S21-Fe31913	CP	%	106			75-125	Pass	
Cadmium	S21-Fe31913	CP	%	113			75-125	Pass	
Chromium	S21-Fe31913	CP	%	110			75-125	Pass	
Copper	S21-Fe31913	CP	%	106			75-125	Pass	
Lead	S21-Fe31913	CP	%	105			75-125	Pass	
Mercury	S21-Fe31913	CP	%	109			75-125	Pass	
Nickel	S21-Fe31913	CP	%	108			75-125	Pass	
Zinc	S21-Fe31913	CP	%	107			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S21-Fe31924	CP	%	89			70-130	Pass	
Acenaphthylene	S21-Fe31924	CP	%	88			70-130	Pass	
Anthracene	S21-Fe31924	CP	%	82			70-130	Pass	
Benz(a)anthracene	S21-Fe31924	CP	%	99			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(a)pyrene	S21-Fe31924	CP	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	S21-Fe31924	CP	%	125			70-130	Pass	
Benzo(g.h.i)perylene	S21-Fe31924	CP	%	90			70-130	Pass	
Benzo(k)fluoranthene	S21-Fe31924	CP	%	82			70-130	Pass	
Chrysene	S21-Fe31924	CP	%	87			70-130	Pass	
Dibenz(a.h)anthracene	S21-Fe31924	CP	%	99			70-130	Pass	
Fluoranthene	S21-Fe31924	CP	%	90			70-130	Pass	
Fluorene	S21-Fe31924	CP	%	82			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31924	CP	%	90			70-130	Pass	
Naphthalene	S21-Fe31924	CP	%	87			70-130	Pass	
Phenanthrene	S21-Fe31924	CP	%	83			70-130	Pass	
Pyrene	S21-Fe31924	CP	%	88			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S21-Fe31924	CP	%	103			75-125	Pass	
Cadmium	S21-Fe31924	CP	%	113			75-125	Pass	
Chromium	S21-Fe31924	CP	%	120			75-125	Pass	
Copper	S21-Fe31924	CP	%	95			75-125	Pass	
Lead	S21-Fe31924	CP	%	101			75-125	Pass	
Mercury	S21-Fe31924	CP	%	109			75-125	Pass	
Nickel	S21-Fe31924	CP	%	94			75-125	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S21-Fe26618	NCP	%	107			70-130	Pass	
4.4'-DDD	S21-Fe26618	NCP	%	102			70-130	Pass	
4.4'-DDE	S21-Fe26618	NCP	%	124			70-130	Pass	
4.4'-DDT	S21-Fe26618	NCP	%	113			70-130	Pass	
a-BHC	S21-Fe26618	NCP	%	104			70-130	Pass	
Aldrin	S21-Fe26618	NCP	%	109			70-130	Pass	
b-BHC	S21-Fe26618	NCP	%	110			70-130	Pass	
d-BHC	S21-Fe26618	NCP	%	105			70-130	Pass	
Dieldrin	S21-Fe26618	NCP	%	104			70-130	Pass	
Endosulfan I	S21-Fe26618	NCP	%	113			70-130	Pass	
Endosulfan II	S21-Fe26618	NCP	%	100			70-130	Pass	
Endosulfan sulphate	S21-Fe26618	NCP	%	90			70-130	Pass	
Endrin	S21-Fe26618	NCP	%	104			70-130	Pass	
Endrin aldehyde	S21-Fe26618	NCP	%	78			70-130	Pass	
Endrin ketone	S21-Fe26618	NCP	%	112			70-130	Pass	
g-BHC (Lindane)	S21-Fe26618	NCP	%	114			70-130	Pass	
Heptachlor	S21-Fe26618	NCP	%	109			70-130	Pass	
Heptachlor epoxide	S21-Fe26618	NCP	%	110			70-130	Pass	
Hexachlorobenzene	S21-Fe26618	NCP	%	103			70-130	Pass	
Methoxychlor	S21-Fe26618	NCP	%	106			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S21-Fe26618	NCP	%	99			70-130	Pass	
Aroclor-1260	S21-Fe26618	NCP	%	101			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31898	CP	%	23	22	5.0	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe31901	CP	mg/kg	700	520	30	30%	Pass	
Cadmium	S21-Fe31901	CP	mg/kg	2.2	2.3	3.0	30%	Pass	
Chromium	S21-Fe31901	CP	mg/kg	77	97	23	30%	Pass	
Copper	S21-Fe31901	CP	mg/kg	1900	2200	14	30%	Pass	
Lead	S21-Fe31901	CP	mg/kg	1400	2900	71	30%	Fail	Q15
Mercury	S21-Fe31901	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Fe31901	CP	mg/kg	56	47	17	30%	Pass	
Zinc	S21-Fe31901	CP	mg/kg	18000	21000	13	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S21-Fe31903	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-Fe31903	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-Fe31903	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S21-Fe31903	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Fe31903	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-Fe31903	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31909	CP	%	6.4	6.8	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31920	CP	%	8.4	7.8	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe31923	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S21-Fe31923	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Fe31923	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S21-Fe31923	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S21-Fe31923	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S21-Fe31923	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Fe31923	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S21-Fe31923	CP	mg/kg	8.8	6.0	39	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31930	CP	%	5.6	6.8	19	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S21-Fe31933	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S21-Fe31933	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-Fe31933	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-Fe31933	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S21-Fe31933	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S21-Fe31933	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S21-Fe31933	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S21-Fe31933	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Fe31933	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-Fe31933	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe31933	CP	mg/kg	11	13	14	30%	Pass	
Cadmium	S21-Fe31933	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S21-Fe31934	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-Fe31934	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-Fe31934	CP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S21-Fe31934	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Fe31934	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-Fe31934	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S21-Fe42089	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S21-Fe42089	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S21-Fe42089	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S21-Fe26630	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total PCB*	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31943	CP	%	9.5	10	7.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

#AU04_Enviro_Sample_NSW

Subject: FW: 5 DAY TAT ADDITIONAL LEACHATES: FW: Eurofins Test Results, Invoice - Report 774362 : Site 12545790

From: Ruth Madden <Ruth.Madden@ghd.com>
Sent: Tuesday, 23 February 2021 3:13 PM
To: Andrew Black <AndrewBlack@eurofins.com>
Subject: RE: Eurofins Test Results, Invoice - Report 774362 : Site 12545790

EXTERNAL EMAIL*

Hi Andrew,

Can I please request TCLP analysis on the following:

Arsenic: BH04_0.3-0.4
Chromium: BH11_0.0-0.1
Lead: BH03_0.0-0.1, BH04_0.3-0.4, BH17_1.0-1.1
Nickel: BH02_0.3-0.4, BH03_0.5-0.6, BH04_0.3-0.4, BH05_1.0-1.1
Benzo(a)pyrene: BH11_0.0-0.1, BH12_0.0-0.1

Thanks,

Ruth

From: AndrewBlack@eurofins.com <AndrewBlack@eurofins.com>
Sent: Tuesday, 23 February 2021 2:36 PM
To: Ruth Madden <Ruth.Madden@ghd.com>
Subject: Eurofins Test Results, Invoice - Report 774362 : Site 12545790

Regards

Andrew Black
Analytical Services Manager

Eurofins | Environment Testing
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AUSTRALIA
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Mobile: +61 410 220 750
Email: AndrewBlack@eurofins.com
Website:environment.eurofins.com.au
EnviroNote 1108 - Emissions from Stationary Sources
EnviroNote 1103 - NATA Accreditation for Dioxins

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Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	GHD Pty Ltd NEWCASTLE
Contact name:	Ruth Madden
Project name:	ADDITIONAL 12545790
Project ID:	12545790
Turnaround time:	5 Day
Date/Time received	Feb 23, 2021 3:13 PM
Eurofins reference	775858

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 21.1 degrees Celsius.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

No sample remaining for BH04_0.3-0.4, BH12_0.0-0.1 analysis cancelled.

Contact

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

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Ruth Madden - ruth.madden@ghd.com.

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

eurofins | Environment Testing

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NATA # 1261 Site # 20794

Perth
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Kewdale WA 6105
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NATA # 1261
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Newcastle
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New Zealand

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Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name: ADDITIONAL 12545790
Project ID: 12545790

Order No.:
Report #: 775858
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 23, 2021 3:13 PM
Due: Mar 2, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Benzo(a)pyrene	CANCELLED	Chromium	Lead	Nickel	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271											
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
Mayfield Laboratory											
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	BH02_0.3-0.4	Feb 11, 2021		US Leachate	S21-Fe44858					X	X
2	BH03_0.0-0.1	Feb 11, 2021		US Leachate	S21-Fe44859				X		X
3	BH03_0.5-0.6	Feb 11, 2021		US Leachate	S21-Fe44860					X	X
4	BH04_0.3-0.4	Feb 11, 2021		US Leachate	S21-Fe44861		X				
5	BH05_1.0-1.1	Feb 11, 2021		US Leachate	S21-Fe44862					X	X
6	BH11_0.0-0.1	Feb 12, 2021		US Leachate	S21-Fe44863	X		X			X
7	BH12_0.0-0.1	Feb 12, 2021		US Leachate	S21-Fe44864		X				
8	BH17_1.0-1.1	Feb 12, 2021		US Leachate	S21-Fe44865				X		X
Test Counts						1	2	1	2	3	6

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention: **Ruth Madden**

Report **775858-L**
Project name ADDITIONAL 12545790
Project ID 12545790
Received Date Feb 23, 2021

Client Sample ID			**BH02_0.3-0.4**	**BH03_0.0-0.1**	**BH03_0.5-0.6**	**BH05_1.0-1.1**
Sample Matrix			**US Leachate**	**US Leachate**	**US Leachate**	**US Leachate**
Eurofins Sample No.			**S21-Fe44858**	**S21-Fe44859**	**S21-Fe44860**	**S21-Fe44862**
Date Sampled			**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.01	mg/L	-	< 0.01	-	-
Nickel	0.01	mg/L	0.01	-	0.02	< 0.01
USA Leaching Procedure						
Leachate Fluid[C01]		comment	1.0	1.0	1.0	1.0
pH (initial)	0.1	pH Units	8.4	8.4	8.5	8.3
pH (off)	0.1	pH Units	6.2	6.4	6.1	5.1
pH (USA HCl addition)	0.1	pH Units	1.9	1.9	1.9	1.9

Client Sample ID			**BH11_0.0-0.1**	**BH17_1.0-1.1**
Sample Matrix			**US Leachate**	**US Leachate**
Eurofins Sample No.			**S21-Fe44863**	**S21-Fe44865**
Date Sampled			**Feb 12, 2021**	**Feb 12, 2021**
Test/Reference	LOR	Unit		
Heavy Metals				
Chromium	0.05	mg/L	< 0.05	-
Lead	0.01	mg/L	-	< 0.01
USA Leaching Procedure				
Leachate Fluid[C01]		comment	1.0	1.0
pH (initial)	0.1	pH Units	8.5	8.0
pH (off)	0.1	pH Units	5.5	5.1
pH (USA HCl addition)	0.1	pH Units	1.9	1.9
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene	0.001	mg/L	< 0.001	-

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Heavy Metals	Sydney	Feb 26, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
USA Leaching Procedure	Sydney	Feb 26, 2021	14 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			
Polycyclic Aromatic Hydrocarbons	Sydney	Feb 26, 2021	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			

eurofins | Environment Testing

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

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Sydney
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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name: ADDITIONAL 12545790
Project ID: 12545790

Order No.:
Report #: 775858
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 23, 2021 3:13 PM
Due: Mar 2, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Benzo(a)pyrene	CANCELLED	Chromium	Lead	Nickel	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271											
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
Mayfield Laboratory											
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	BH02_0.3-0.4	Feb 11, 2021		US Leachate	S21-Fe44858					X	X
2	BH03_0.0-0.1	Feb 11, 2021		US Leachate	S21-Fe44859				X		X
3	BH03_0.5-0.6	Feb 11, 2021		US Leachate	S21-Fe44860					X	X
4	BH04_0.3-0.4	Feb 11, 2021		US Leachate	S21-Fe44861		X				
5	BH05_1.0-1.1	Feb 11, 2021		US Leachate	S21-Fe44862					X	X
6	BH11_0.0-0.1	Feb 12, 2021		US Leachate	S21-Fe44863	X		X			X
7	BH12_0.0-0.1	Feb 12, 2021		US Leachate	S21-Fe44864		X				
8	BH17_1.0-1.1	Feb 12, 2021		US Leachate	S21-Fe44865				X		X
Test Counts						1	2	1	2	3	6

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Heavy Metals							
Chromium	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.01			0.01	Pass	
Nickel	mg/L	< 0.01			0.01	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
LCS - % Recovery							
Heavy Metals							
Chromium	%	100			80-120	Pass	
Lead	%	111			80-120	Pass	
Nickel	%	98			80-120	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene	%	81			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Nickel	S21-Fe44847	NCP	%	99			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Lead	S21-Fe44847	NCP	%	102			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Chromium	S21-Fe44847	NCP	%	103			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Benzo(a)pyrene	S21-Fe52196	NCP	%	90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Chromium	S21-Fe44858	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	S21-Fe44858	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nickel	S21-Fe44858	CP	mg/L	0.01	0.01	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lead	S21-Fe40738	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Chromium	S21-Fe40738	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Benzo(a)pyrene	S21-Fe49781	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other

Authorised by:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

#776132

#AU03_EnviroSampleBris

From: Andrew Black
Sent: Wednesday, 24 February 2021 4:01 PM
To: #AU03_EnviroSampleBris
Subject: FW: Eurofins Test Results, Invoice - Report 774362 : Site 12545790

Importance: High

Thanks James, client as per below has given the go ahead to analyse for PFAS can you please place on a 3 day TAT

All tubs from 774362
except any that have same BH number.
BSFe257,273,320

Andrew Black
Phone: +61 410 220 750
Email: AndrewBlack@eurofins.com

From: Ruth Madden <Ruth.Madden@ghd.com>
Sent: Wednesday, 24 February 2021 4:59 PM
To: Andrew Black <AndrewBlack@eurofins.com>
Subject: RE: Eurofins Test Results, Invoice - Report 774362 : Site 12545790

EXTERNAL EMAIL*

Thanks Andrew that's great. Can you please analyse four of them for PFAS – I believe one or 2 might be for the same borehole so I would prefer to have 4 analysed from different locations if possible to get site coverage.

Thanks,

Ruth

From: Andrew Black <AndrewBlack@eurofins.com>
Sent: Wednesday, 24 February 2021 4:57 PM
To: Ruth Madden <Ruth.Madden@ghd.com>
Subject: FW: Eurofins Test Results, Invoice - Report 774362 : Site 12545790

Hi Ruth

Brisbane have confirmed they have 5 PFAS tubs of samples. Would you like all 5 analysed?

Andrew Black
Phone: +61 410 220 750
Email: AndrewBlack@eurofins.com

From: Ruth Madden <Ruth.Madden@ghd.com>
Sent: Tuesday, 23 February 2021 4:18 PM

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NATA # 1261 Site # 18217

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Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	GHD Pty Ltd NEWCASTLE
Contact name:	Ruth Madden
Project name:	Not provided
Project ID:	12545790
Turnaround time:	3 Day
Date/Time received	Feb 24, 2021 4:01 PM
Eurofins reference	776132

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 21.1 degrees Celsius.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Contact

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

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Ruth Madden - ruth.madden@ghd.com.

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

eurofins | Environment Testing

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

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IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 776132
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 24, 2021 4:01 PM
Due: Mar 1, 2021
Priority: 3 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
Mayfield Laboratory							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BH08_2.0-2.1	Feb 11, 2021		Soil	B21-Fe47606	X	X
2	BH12_1.0-1.1	Feb 11, 2021		Soil	B21-Fe47607	X	X
3	BH19_0.3-0.4	Feb 11, 2021		Soil	B21-Fe47608	X	X
4	BH06_2.0-2.1	Feb 11, 2021		Soil	B21-Fe47609	X	X
Test Counts						4	4

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

NATA Accredited
Accreditation Number 1261
Site Number 20794

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

Attention: **Ruth Madden**

Report **776132-S**
Project name
Project ID 12545790
Received Date Feb 24, 2021

Client Sample ID			**BH08_2.0-2.1**	**BH12_1.0-1.1**	**BH19_0.3-0.4**	**BH06_2.0-2.1**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**B21-Fe47606**	**B21-Fe47607**	**B21-Fe47608**	**B21-Fe47609**
Date Sampled			**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**
Test/Reference	LOR	Unit				
% Moisture	1	%	12	2.6	3.8	15
Perfluoroalkyl carboxylic acids (PFCAs)						
Perfluorobutanoic acid (PFBA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanoic acid (PFPeA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanoic acid (PFHxA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanoic acid (PFHpA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanoic acid (PFOA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanoic acid (PFNA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanoic acid (PFDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroundecanoic acid (PFUnDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorododecanoic acid (PFDoDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotridecanoic acid (PFTrDA)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorotetradecanoic acid (PFTeDA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C4-PFBA (surr.)	1	%	132	137	142	131
13C5-PFPeA (surr.)	1	%	142	141	136	129
13C5-PFHxA (surr.)	1	%	132	131	148	133
13C4-PFHpA (surr.)	1	%	130	136	135	133
13C8-PFOA (surr.)	1	%	127	135	138	125
13C5-PFNA (surr.)	1	%	116	124	123	122
13C6-PFDA (surr.)	1	%	132	141	143	142
13C2-PFUnDA (surr.)	1	%	97	99	100	100
13C2-PFDoDA (surr.)	1	%	98	99	98	97
13C2-PFTeDA (surr.)	1	%	108	110	113	100
Perfluoroalkyl sulfonamido substances						
Perfluorooctane sulfonamide (FOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
13C8-FOSA (surr.)	1	%	125	128	136	120

Client Sample ID			BH08_2.0-2.1	BH12_1.0-1.1	BH19_0.3-0.4	BH06_2.0-2.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			B21-Fe47606	B21-Fe47607	B21-Fe47608	B21-Fe47609
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Perfluoroalkyl sulfonamido substances						
D3-N-MeFOSA (surr.)	1	%	131	125	114	122
D5-N-EtFOSA (surr.)	1	%	148	149	155	146
D7-N-MeFOSE (surr.)	1	%	109	109	112	106
D9-N-EtFOSE (surr.)	1	%	99	102	109	106
D5-N-EtFOSAA (surr.)	1	%	110	121	120	109
D3-N-MeFOSAA (surr.)	1	%	99	102	107	100
Perfluoroalkyl sulfonic acids (PFSAs)						
Perfluorobutanesulfonic acid (PFBS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorononanesulfonic acid (PFNS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropropanesulfonic acid (PFPrS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoropentanesulfonic acid (PFPeS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorohexanesulfonic acid (PFHxS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluoroheptanesulfonic acid (PFHpS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorooctanesulfonic acid (PFOS)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
Perfluorodecanesulfonic acid (PFDS)[N15]	5	ug/kg	< 5	< 5	< 5	< 5
13C3-PFBS (surr.)	1	%	141	154	141	134
18O2-PFHxS (surr.)	1	%	135	138	136	131
13C8-PFOS (surr.)	1	%	134	144	143	135
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)						
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)[N11]	10	ug/kg	< 10	< 10	< 10	< 10
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)[N11]	5	ug/kg	< 5	< 5	< 5	< 5
13C2-4:2 FTS (surr.)	1	%	110	101	126	106
13C2-6:2 FTSA (surr.)	1	%	116	159	158	116
13C2-8:2 FTSA (surr.)	1	%	118	130	118	123
13C2-10:2 FTSA (surr.)	1	%	94	99	94	101
PFASs Summations						
Sum (PFHxS + PFOS)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of US EPA PFAS (PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)*	5	ug/kg	< 5	< 5	< 5	< 5
Sum of WA DWER PFAS (n=10)*	10	ug/kg	< 10	< 10	< 10	< 10
Sum of PFASs (n=30)*	50	ug/kg	< 50	< 50	< 50	< 50

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
% Moisture	Brisbane	Feb 26, 2021	14 Days
- Method: LTM-GEN-7080 Moisture			
Per- and Polyfluoroalkyl Substances (PFASs)			
Perfluoroalkyl carboxylic acids (PFCAs)	Brisbane	Feb 25, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonamido substances	Brisbane	Feb 25, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
Perfluoroalkyl sulfonic acids (PFSAs)	Brisbane	Feb 25, 2021	14 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)	Brisbane	Feb 25, 2021	180 Days
- Method: LTM-ORG-2100 Per- and Polyfluoroalkyl Substances (PFAS)			

eurofins | Environment Testing

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Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
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Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 776132
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 24, 2021 4:01 PM
Due: Mar 1, 2021
Priority: 3 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Moisture Set	Per- and Polyfluoroalkyl Substances (PFASs)
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217							
Brisbane Laboratory - NATA Site # 20794						X	X
Perth Laboratory - NATA Site # 23736							
Mayfield Laboratory							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BH08_2.0-2.1	Feb 11, 2021		Soil	B21-Fe47606	X	X
2	BH12_1.0-1.1	Feb 11, 2021		Soil	B21-Fe47607	X	X
3	BH19_0.3-0.4	Feb 11, 2021		Soil	B21-Fe47608	X	X
4	BH06_2.0-2.1	Feb 11, 2021		Soil	B21-Fe47609	X	X
Test Counts						4	4

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

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

Units

mg/kg: milligrams per kilogram
mg/L: milligrams per litre
ug/L: micrograms per litre
ppm: Parts per million
ppb: Parts per billion
%: Percentage
org/100mL: Organisms per 100 millilitres
NTU: Nephelometric Turbidity Units
MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	ug/kg	< 5			5	Pass	
Perfluoropentanoic acid (PFPeA)	ug/kg	< 5			5	Pass	
Perfluorohexanoic acid (PFHxA)	ug/kg	< 5			5	Pass	
Perfluoroheptanoic acid (PFHpA)	ug/kg	< 5			5	Pass	
Perfluorooctanoic acid (PFOA)	ug/kg	< 5			5	Pass	
Perfluorononanoic acid (PFNA)	ug/kg	< 5			5	Pass	
Perfluorodecanoic acid (PFDA)	ug/kg	< 5			5	Pass	
Perfluoroundecanoic acid (PFUnDA)	ug/kg	< 5			5	Pass	
Perfluorododecanoic acid (PFDoDA)	ug/kg	< 5			5	Pass	
Perfluorotridecanoic acid (PFTrDA)	ug/kg	< 5			5	Pass	
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	< 5			5	Pass	
Method Blank							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	ug/kg	< 5			5	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	ug/kg	< 5			5	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	ug/kg	< 5			5	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	ug/kg	< 5			5	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	ug/kg	< 5			5	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	ug/kg	< 10			10	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	ug/kg	< 10			10	Pass	
Method Blank							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	ug/kg	< 5			5	Pass	
Perfluorononanesulfonic acid (PFNS)	ug/kg	< 5			5	Pass	
Perfluoropropanesulfonic acid (PFPrS)	ug/kg	< 5			5	Pass	
Perfluoropentanesulfonic acid (PFPeS)	ug/kg	< 5			5	Pass	
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	< 5			5	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	< 5			5	Pass	
Perfluorooctanesulfonic acid (PFOS)	ug/kg	< 5			5	Pass	
Perfluorodecanesulfonic acid (PFDS)	ug/kg	< 5			5	Pass	
Method Blank							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	ug/kg	< 10			10	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	ug/kg	< 5			5	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	ug/kg	< 5			5	Pass	
LCS - % Recovery							
Perfluoroalkyl carboxylic acids (PFCAs)							
Perfluorobutanoic acid (PFBA)	%	85			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	%	85			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	%	89			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	%	89			50-150	Pass	
Perfluorooctanoic acid (PFOA)	%	90			50-150	Pass	
Perfluorononanoic acid (PFNA)	%	94			50-150	Pass	
Perfluorodecanoic acid (PFDA)	%	81			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	%	85			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	%	102			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	%	97			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	%	92			50-150	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
LCS - % Recovery							
Perfluoroalkyl sulfonamido substances							
Perfluorooctane sulfonamide (FOSA)	%	91			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	%	96			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	%	100			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	%	85			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	%	92			50-150	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	%	94			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	%	90			50-150	Pass	
LCS - % Recovery							
Perfluoroalkyl sulfonic acids (PFSAs)							
Perfluorobutanesulfonic acid (PFBS)	%	73			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	%	97			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	%	93			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	%	71			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	%	90			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	%	100			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	%	87			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	%	96			50-150	Pass	
LCS - % Recovery							
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)							
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	%	91			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	%	91			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	%	92			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	%	103			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1					
Perfluorobutanoic acid (PFBA)	S21-Fe42497	NCP	%	81			50-150	Pass	
Perfluoropentanoic acid (PFPeA)	S21-Fe42497	NCP	%	86			50-150	Pass	
Perfluorohexanoic acid (PFHxA)	S21-Fe42497	NCP	%	84			50-150	Pass	
Perfluoroheptanoic acid (PFHpA)	S21-Fe42497	NCP	%	89			50-150	Pass	
Perfluorooctanoic acid (PFOA)	S21-Fe42497	NCP	%	85			50-150	Pass	
Perfluorononanoic acid (PFNA)	S21-Fe42497	NCP	%	92			50-150	Pass	
Perfluorodecanoic acid (PFDA)	S21-Fe42497	NCP	%	82			50-150	Pass	
Perfluoroundecanoic acid (PFUnDA)	S21-Fe42497	NCP	%	86			50-150	Pass	
Perfluorododecanoic acid (PFDoDA)	S21-Fe42497	NCP	%	97			50-150	Pass	
Perfluorotridecanoic acid (PFTrDA)	S21-Fe42497	NCP	%	100			50-150	Pass	
Perfluorotetradecanoic acid (PFTeDA)	S21-Fe42497	NCP	%	98			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonamido substances				Result 1					
Perfluorooctane sulfonamide (FOSA)	S21-Fe42497	NCP	%	98			50-150	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	S21-Fe42497	NCP	%	91			50-150	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	S21-Fe42497	NCP	%	96			50-150	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	S21-Fe42497	NCP	%	89			50-150	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	S21-Fe42497	NCP	%	91			50-150	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	S21-Fe42497	NCP	%	102			50-150	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	S21-Fe42497	NCP	%	93			50-150	Pass	
Spike - % Recovery									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1					
Perfluorobutanesulfonic acid (PFBS)	S21-Fe42497	NCP	%	69			50-150	Pass	
Perfluorononanesulfonic acid (PFNS)	S21-Fe42497	NCP	%	101			50-150	Pass	
Perfluoropropanesulfonic acid (PFPrS)	S21-Fe42497	NCP	%	85			50-150	Pass	
Perfluoropentanesulfonic acid (PFPeS)	S21-Fe42497	NCP	%	68			50-150	Pass	
Perfluorohexanesulfonic acid (PFHxS)	S21-Fe42497	NCP	%	52			50-150	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	S21-Fe42497	NCP	%	97			50-150	Pass	
Perfluorooctanesulfonic acid (PFOS)	S21-Fe39625	NCP	%	119			50-150	Pass	
Perfluorodecanesulfonic acid (PFDS)	S21-Fe42497	NCP	%	92			50-150	Pass	
Spike - % Recovery									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1					
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	S21-Fe42497	NCP	%	104			50-150	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	S21-Fe42497	NCP	%	130			50-150	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	S21-Fe42497	NCP	%	98			50-150	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	S21-Fe42497	NCP	%	113			50-150	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	B21-Fe47631	NCP	%	63	63	1.0	30%	Pass	
Duplicate									
Perfluoroalkyl carboxylic acids (PFCAs)				Result 1	Result 2	RPD			
Perfluorobutanoic acid (PFBA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanoic acid (PFPeA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanoic acid (PFHxA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanoic acid (PFHpA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanoic acid (PFOA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanoic acid (PFNA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanoic acid (PFDA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroundecanoic acid (PFUnDA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorododecanoic acid (PFDoDA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotridecanoic acid (PFTrDA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorotetradecanoic acid (PFTeDA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	

Duplicate									
Perfluoroalkyl sulfonamido substances				Result 1	Result 2	RPD			
Perfluorooctane sulfonamide (FOSA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-methylperfluoro-1-octane sulfonamide (N-MeFOSA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethylperfluoro-1-octane sulfonamide (N-EtFOSA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-methylperfluoro-1-octane sulfonamido)-ethanol (N-MeFOSE)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
2-(N-ethylperfluoro-1-octane sulfonamido)-ethanol (N-EtFOSE)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
N-ethyl-perfluorooctanesulfonamidoacetic acid (N-EtFOSAA)	B21-Fe47606	CP	ug/kg	< 10	< 10	<1	30%	Pass	
N-methyl-perfluorooctanesulfonamidoacetic acid (N-MeFOSAA)	B21-Fe47606	CP	ug/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Perfluoroalkyl sulfonic acids (PFSAs)				Result 1	Result 2	RPD			
Perfluorobutanesulfonic acid (PFBS)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorononanesulfonic acid (PFNS)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropropanesulfonic acid (PFPrS)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoropentanesulfonic acid (PFPeS)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorohexanesulfonic acid (PFHxS)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluoroheptanesulfonic acid (PFHpS)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorooctanesulfonic acid (PFOS)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Perfluorodecanesulfonic acid (PFDS)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
n:2 Fluorotelomer sulfonic acids (n:2 FTSAs)				Result 1	Result 2	RPD			
1H.1H.2H.2H-perfluorohexanesulfonic acid (4:2 FTSA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorooctanesulfonic acid (6:2 FTSA)	B21-Fe47606	CP	ug/kg	< 10	< 10	<1	30%	Pass	
1H.1H.2H.2H-perfluorodecanesulfonic acid (8:2 FTSA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	
1H.1H.2H.2H-perfluorododecanesulfonic acid (10:2 FTSA)	B21-Fe47606	CP	ug/kg	< 5	< 5	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N11	Isotope dilution is used for calibration of each native compound for which an exact labelled analogue is available (Isotope Dilution Quantitation). The isotopically labelled analogues allow identification and recovery correction of the concentration of the associated native PFAS compounds.
N15	Where the native PFAS compound does not have labelled analogue then the quantification is made using the Extracted Internal Standard Analyte with the closest retention time to the analyte and no recovery correction has been made (Internal Standard Quantitation).

Authorised by:

Andrew Black	Analytical Services Manager
Sarah McCallion	Senior Analyst-PFAS (QLD)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

Appendix H – Equipment calibration certificates

PID Calibration Certificate

airmet

Air-Met Scientific Pty Ltd
1300 137 067

Instrument PhoCheck Tiger
Serial No. T-113988

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

Certificate of Calibration

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

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No		Instrument Reading
PID Lamp		100ppm Isobutylene		SY359		100.4 ppm

Calibrated by: Lauren Tompkins

Calibration date: 8/02/2021

Next calibration due: 7/08/2021

Appendix I – In-Situ Waste Classification

09 March 2021

Andrew Stone
Project Manager
Port of Newcastle
Level 4, 251 Wharf Road
NEWCASTLE NSW 2300

Our ref: 12545790-37060-87
Your ref:

Dear Andrew

Port of Newcastle 46 Denison Street
In-Situ Waste Classification

1 Introduction and background

Port of Newcastle (PoN) is undertaken development at 46 Fitzroy Street / 65 Denison Street, Carrington NSW (hereafter referred to as 'the site'). The site location is shown in Figure 1 in Appendix A. The site currently is a vacant lot containing a cement slab and an open grassed area.

PoN has engaged GHD Pty Ltd (GHD) to undertake an in-situ waste classification of soils at the site which may require removal to an off-site location during development works.

This waste classification letter relates to in-situ material from the site. Sample locations are presented in Figure 3 in Appendix A.

2 Objective

The objective is to provide a waste classification of the in-situ soil material to facilitate potential disposal costs if excavation and off-site removal is required in accordance with NSW Environment Protection Authority (EPA) *Waste Classification Guidelines* (2014).

3 Scope of work

The scope of work comprised:

- Collection and analysis of representative In situ samples from 19 boreholes drilled to a maximum depth of 2.1 metres.
- Comparison of the laboratory results against criteria provided by NSW EPA *Waste Classification Guidelines* (2014) and assessment of the waste classification for off-site disposal.
- Comparison of the laboratory results against the NSW EPA ENM Order 2014.

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T +61 2 4979 9999 **F** +61 2 9475 0725 **E** ntlmail@ghd.com **W** www.ghd.com

4 Methodology

It is noted that there are no current guidelines that determine the number of sampling locations required for in-situ waste classification. However, the Excavated Natural Material (ENM) Order 2014 nominates minimum sampling densities required for soils to be classified as ENM. For the purpose of this waste classification, the sampling densities outlined in the ENM Order 2014 we used to guide the sampling program. The ENM Order 2014 states that for a site that is approximately 8,680 m^2, a minimum number of 19 sample locations is required. Based on this, 19 boreholes were drilled to a maximum of 2.1 metres depth on site between 11 February and 12 February.

Soil sampling was carried out using push tubes mounted on a tracked drill rig. Samples were generally collected at the surface and at 0.3, 0.5, 1.0 and 2.0 metres below ground level. Samples were analysed for heavy metals, hydrocarbons, organic pesticides, PCBs, asbestos and PFAS.

4.1 Waste classification information

A summary of waste classification information is provided in Table 1, in accordance with the NSW EPA's waste legislation.

Table 1 Waste classification summary information

Detail	Information
Full name, address, Australian Company Number (ACN) or Australian Business Number (ABN) of the organisation and person(s) providing the waste classification	GHD Pty Ltd Level 3, 24 Honeysuckle Drive, Newcastle, 2300 ACN: 008 488 373 / ABN: 39 008 488 373
Location of the site where the waste was generated including the site address	Development of the site may require excavations and off-site removal of soils. The site is located at 46 Fitzroy Street / 65 Denison Street, Carrington NSW and is identified as Lot 33 DP1078910. The site is bounded by industrial and commercial facilities with Throsby Creek and the Hunter River to the south and east.
History of the material and the processes and activities that have taken place to produce the waste	A review of aerial photographs identified the site was reclaimed prior to 1954. A review of Development Applications approved for the site indicate that it was used for the manufacture of clothing and surfboards. The warehouse buildings on site were demolished in late 2017 and the site has sat vacant since (GHD, 2020). As the site is located on reclaimed land and was filled prior to 1954, there is no record of the quality and source of the fill used.

Detail	Information
Potential contaminating activities that may have occurred at the site where the waste was generated	Based on historical information, the site was built upon reclaimed land where ballast and waste slag have thought to be used as fill material. Land use from 1990 onwards has included surfboard manufacture, retail premises and clothing manufacture. Building demolition in 2017 has potential for hazardous building materials (such as asbestos) to remain in soils on site. Historical use of pesticides or herbicides as part of property maintenance may have led to contamination events. Spills or leaks of hydrocarbons and chemicals may have occurred on site.
Description of the waste, including photographs, visible signs of contamination, such as discoloration, staining, odours, etc.	Soils on site were generally comprised of brown fill material to approximately 1.0/1.5 metres, followed by a brown and black clay layer to approximately 1.5/2.0 metres. Natural material was generally comprised of coarse grey sands and silts. 
Quantity of the waste (estimated)	The volume of waste to be excavated is unknown at this stage.,.
Number of samples collected and analysed	51 primary samples were collected during field works. Of these samples, 38 were analysed at the laboratory along with five composite samples. Four duplicate samples were also collected and analysed.
Sampling method including pattern, depth, locations, sampling devices, procedures, and photos of the sample locations and samples	19 boreholes were advanced via push tube using a track mounted drill rig. Samples were generally collected at surface level and 0.3, 0.5, 1.0, 1.5 and 2 metres below ground level at each borehole. Sample depths and approximate borehole locations are provided in Figure 3, Appendix A.
Contaminants tested	Soil samples were tested for:

Detail	Information
	• Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc) • Total recoverable hydrocarbons (TRH) • Benzene, toluene, ethylbenzene, xylenes, and naphthalene (BTEXN) • Polycyclic aromatic hydrocarbons (PAH) • Asbestos • Polychlorinated biphenyls (PCB) • Organochlorine Pesticides (OCP) • Per- and polyfluoroalkyl substances (PFAS) TCLP analysis was undertaken on arsenic, chromium, lead and nickel on selected samples.
Laboratory documentation – chain-of- custody, sample receipt, laboratory reports	Laboratory analysis certificates and chain-of-custody documentation are provided in Appendix C All samples were analysed by laboratories accredited by National Association of Testing Authorities (NATA), Australia.
All results regardless of whether they are not used in the classification process	No previous soil data was available for this material. All available data has been considered.
Results of sample mean, sample standard deviation and the 95 per cent upper confidence limit (UCL)	A 95% UCL was calculated for lead, nickel and benzo(a)pyrene. This calculation was based on the 37 primary data points and the LOR was used as a substitute for non-detect values as an additional conservative measure. The concentration at BH04_0.3-0.4 was excluded from the 95% UCL calculations as it was greater than 250% of the CT1 guideline. • The calculated UCL for lead was **80.12**, which was less than the CT1 value of 100. For all detects, sample mean was 98.09 and standard deviation was 273.3. • The calculated UCL for nickel was **19.51**, which was less than the CT1 value of 40. For all detects, sample mean was 21.2 and standard deviation was 15.99. • The calculated UCL for benzo(a)pyrene was **0.687,** which was less than the CT1 value of 0.8/. For all detects, sample mean was 1.033 and standard deviation 0.662. The UCL output is included in Appendix D.

4.2

4.2 Waste classification guidelines

The chemical concentrations from the soil samples were compared to the criteria outlined in Table 1 and Table 2 (where required) of the NSW EPA (2014) *Waste Classification Guidelines: Part 1 Classification of Waste*. The guidelines provide criteria for assessing the appropriate waste classification and subsequent disposal location for solid wastes. The classification process for non–liquid wastes focuses on the potential for the waste to release chemical contaminants into the environment through contact with liquids (leachates).

The method used to chemically assess waste is the Contaminant Threshold (CT) test which determines the concentration of each contaminant in the waste sample. The guidelines set different maximum levels for the total concentration of each contaminant when leachability data is not available, in order for waste to be classified as either general solid waste or restricted solid waste. If the level exceeds the restricted solid waste criteria, the material is classified as hazardous waste. If the waste exceeds the CT criteria, further assessment using the TCLP test may be used to determine the leachable concentration of that contaminant and the class of waste. Contaminants are then compared against the specific contaminant concentration (SCC) criteria.

In addition, should the waste be found (or reasonably suspected) to contain asbestos then the material should be classified as special waste mixed with general solid, restricted solid or hazardous waste (as applicable) and managed accordingly.

As detailed in the NSW EPA (2014) *Waste Classification Guidelines.* It is recommended that the sample mean, the sample standard deviation and the 95% UCL of the mean concentration is calculated for each contaminant to ensure that the 95% UCL for the mean concentration is less than or equal to the SCC or TCLP limit value specified for that contaminant.

5 Results and discussion

Analytical results are tabulated in Appendix B. Samples analysed asbestos did not identify any asbestos present in soils.

A summary of results for total chemical concentrations is provided in Appendix D. The following exceedances of CT1 criteria for General Solid Waste (GSW) were recorded:

- BH02_0.3-0.4 – Nickel 45 mg/kg
- BH03_0.0-0.1 – Lead: 330 mg/kg
- BH04_0.3-0.4 – Arsenic: 700 mg/kg; Nickel 56 mg/kg
- BH05_1.0-1.1 – Nickel: 47 mg/kg
- BH11_0.0-0.1 – Chromium 120 mg/kg; Benzo(a)pyrene 2.3 mg/kg
- BH12_0.0-0.1 –Benzo(a)pyrene 1.0 mg/kg
- BH17_0.0-0.1 – Lead 140 mg/kg; Benzo(a)pyrene 1.1 mg/kg

The following exceedances of the CT2 criteria for Restricted Solid Waste (RSW) were recorded:

- BH04_0.3-0.4 – Lead 1,400 mg/kg

Where possible, the above samples were tested for heavy metal leachability via Toxicity Characteristic Leaching Procedure (TLCP). Following TCLP analysis, all samples were below the SCC1 criteria for GSW with the exception of the following:

- BH04_0.3-0.4 (insufficient sample to perform TCLP analysis).
- BH11_0.0-0.1 – Benzo(a)pyrene (insufficient sample to perform TCLP analysis)
- BH12_0.0-0.1 – Benzo(a)pyrene (insufficient sample to perform TCLP analysis)
- BH17_0.0-0.1 - Benzo(a)pyrene (insufficient sample to perform TCLP analysis)

A 95% UCL was calculated for lead, nickel and benzo(a)pyrene. This calculation was based on the 37 primary data points and the LOR was used as a substitute for non-detect values as an additional conservative measure. The concentration at BH04_0.3-0.4 was excluded from the 95% UCL calculations as it was greater than 250% of the CT1 guideline.

- The calculated UCL for lead was **80.12**, which was less than the CT1 value of 100. For all detects, sample mean was 98.09 and standard deviation was 273.3.
- The calculated UCL for nickel was **19.51**, which was less than the CT1 value of 40. For all detects, sample mean was 21.2 and standard deviation was 15.99.
- The calculated UCL for benzo(a)pyrene was **0.687,** which was less than the CT1 value of 0.8.

6 Waste classification assessment

The Waste Classification Guidelines Part 1: Classifying Waste (2014) for off-site disposal, classify wastes into groups that pose similar risk to the environment and human health.

The following classes of waste are defined in clause 49 of Schedule 1 of the Protection of the Environment Operations Act 1997 (POEO Act):

- Special waste
- Liquid waste
- Hazardous waste
- Restricted solid waste
- General solid waste (putrescible)
- General solid waste (non-putrescible)

6.1 Steps 1 – 6 of the Waste Classification Guidelines Part 1: Classifying Waste (2014)

The waste classification guidelines outline steps to determine which of the aforementioned classifications applies to the waste being assessed.

Table 2 Review of Steps 1 – 6 of the waste classification guidelines (2014)

Step	Outcome
Step 1 – Is the waste special waste?	No – asbestos not detected
Step 2 – Is the waste liquid waste?	No
Step 3 – Is the waste pre- classified?	No
Step 4 – Does the waste possess hazardous characteristics?	No
Step 5 – Determining a waste's classification using chemical assessment	**General Solid Waste** – the majority of the site can be classified as GSW based on laboratory results being below CT1 and SSC1 (where applicable). The calculated UCL for benzo(a)pyrene was used. There is a hotspot at location BH04 (eastern portion of the site) which is classified as **Hazardous Waste** as heavy metal concentrations exceed CT1 criteria for arsenic and nickel and CT2 criteria for lead.
Step 6 – Is the waste putrescible of non-putrescible?	Non- putrescible

7 Conclusions

Based on the results of the laboratory analyses and in accordance with the NSW EPA (2014) *Waste Classification Guidelines,* the waste classification for the soil assessed from the excavated soils associated within the site are generally **General Solid Waste (GSW).** Soils within the hotspot of contaminants in the location of BH04, are classified as **Hazardous Waste (HW).**

8 Limitations

This letter has been prepared by GHD Pty Ltd for Port of Newcastle for the purpose of waste classification of the material noted. No warranties, expressed or implied, are offered to any third party and no liability will be accepted for the use of this report by any third party. This report was prepared to provide a waste classification of the material for off-site disposal.

The advice herein relates only to this project and specifically to samples of the material within the areas investigated. All results, conclusions and recommendations made should be reviewed by a competent and experienced person with experience in environmental investigations, before being used for any other purpose. GHD accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by GHD.

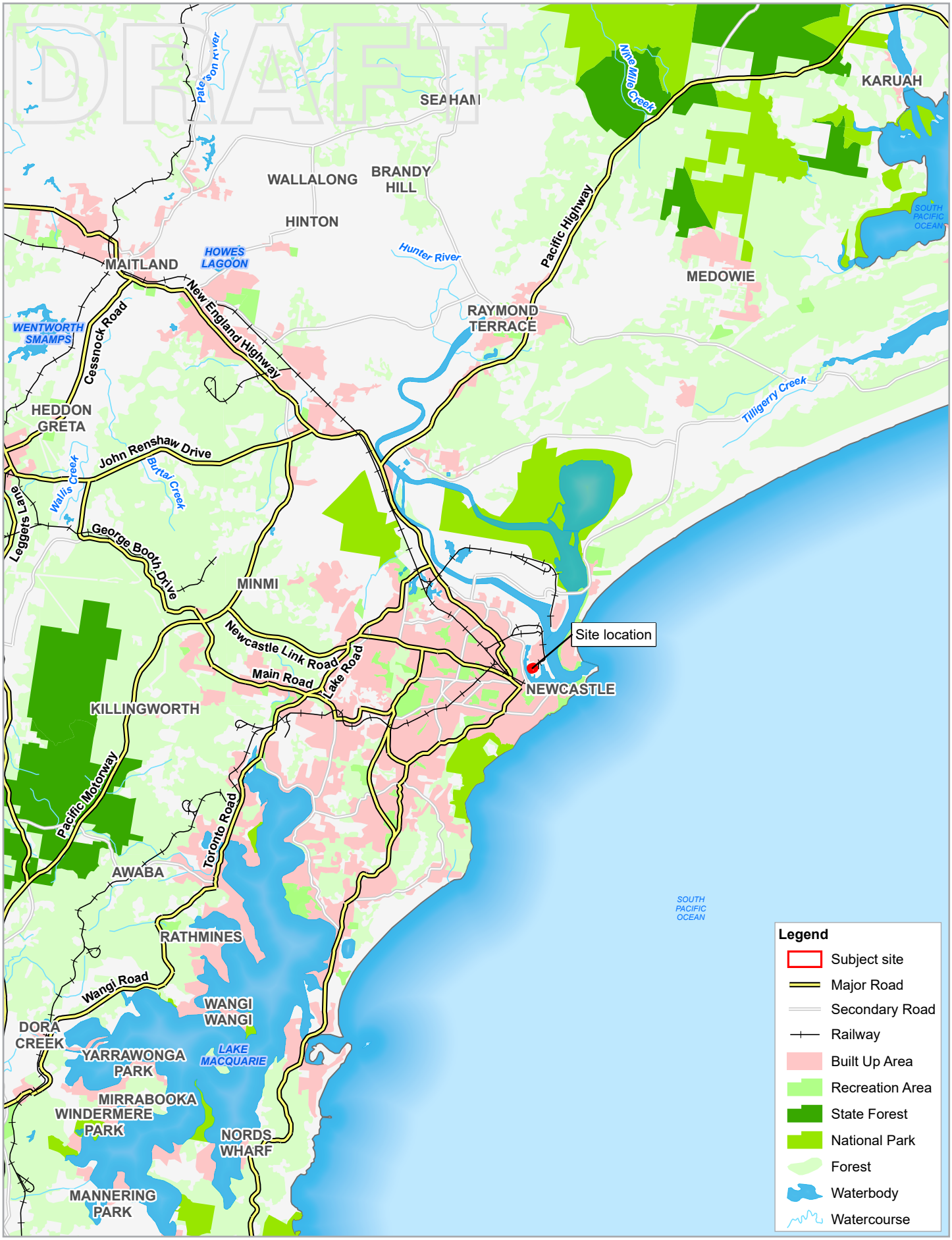
This letter does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, GHD reserves the right to review the letter in the context of the additional information.

Should you wish to discuss any details of regarding the waste classification, please do not hesitate to contact the undersigned.

Sincerely
GHD

Ruth Madden
Environmental Scientist
+61 2 49107761

Appendix A – Figures



Paper Size ISO A4

0 1.5 3 4.5 6 7.5

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

GHD

Port of Newcastle Operations Pty Ltd
Denison Street Development
Detailed Site Investigation

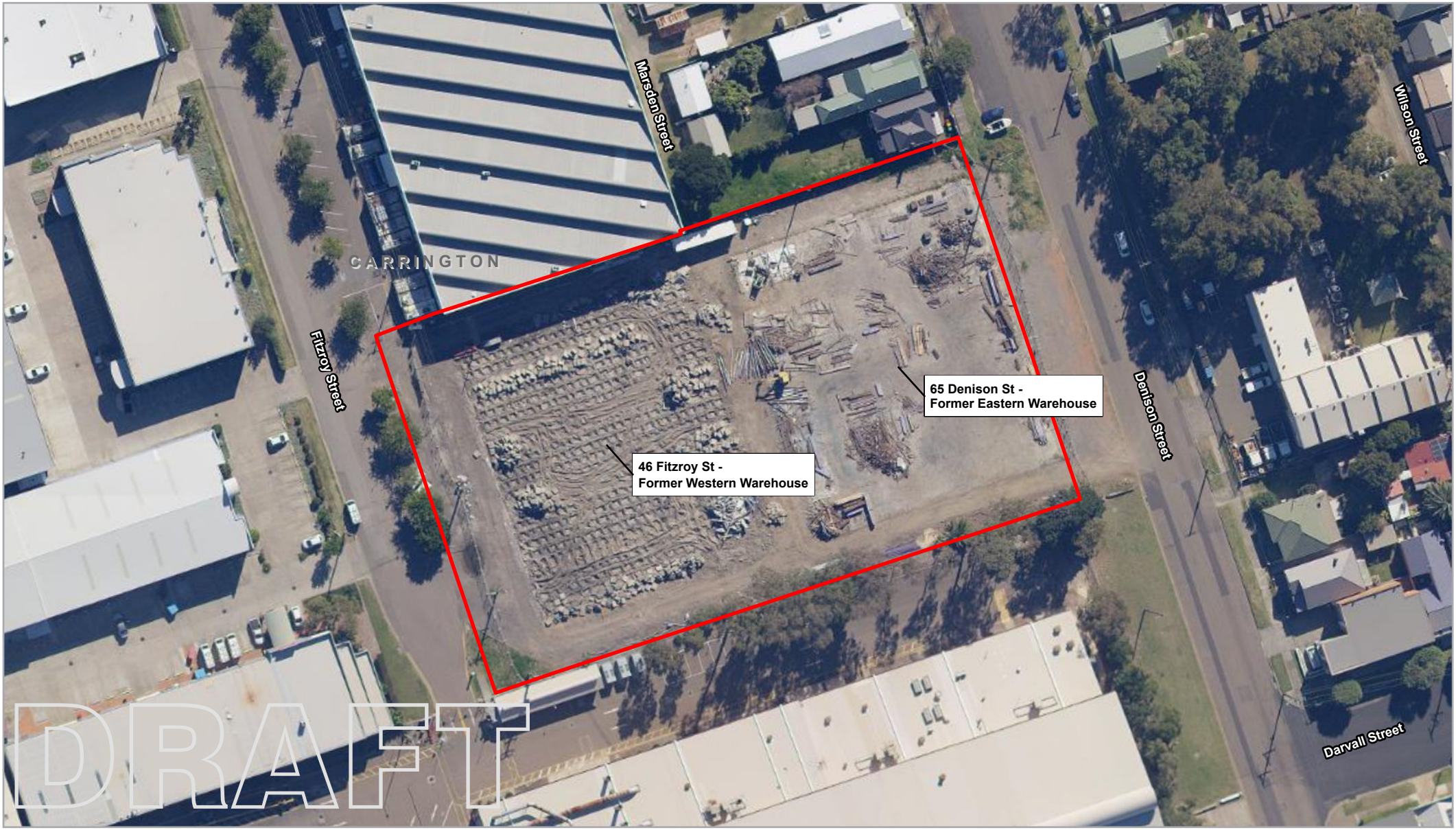
Project No. **12545790**
Revision No. **A**
Date **09/03/2021**

Site Location

FIGURE 1

G:\22\12527619\GIS\Maps\12527619_FitzroyStMineSubsidenceAndContamination\12545790_DetailedSiteInvest_A.aprx\12545790_DSI001_RegionalLocality_A
Print date: 09 Mar 2021 - 13:35

Data source: Commonwealth of Australia (Geoscience Australia): 250K Topographic Data Series 3, 2006. .
Created by: tmorton



Legend

Site Boundary

Paper Size ISO A4

0 8 16 24 32

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Port of Newcastle Operations Pty Ltd
Denison Street Development
Detailed Site Investigation

Site Plan

Project No. **12545790**
Revision No. **A**
Date **09/03/2021**

FIGURE 2

G:\22\12527619\GIS\Maps\12527619_FitzroyStMineSubsidenceAndContamination\12545790_DetailedSiteInvest_A.aprx\12545790_DSI002_SitePlan_A
Print date: 09 Mar 2021 - 14:15

Data source: LPI: DCDB/DTDB, 2017. public_NSW_Imagery: © Department of Customer Service 2020.
Created by: tmorton

Legend

- Site Boundary
- Sampling locations

Paper Size ISO A4

0 8 16 24 32

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

N

Port of Newcastle Operations Pty Ltd
Denison Street Development
Detailed Site Investigation

Sample Locations

Project No. **12545790**
Revision No. **A**
Date **09/03/2021**

FIGURE 3

G:\22\12527619\GIS\Maps\12527619_FitzroyStMineSubsidenceAndContamination\12545790_DetailedSiteInvest_A.aprx\12545790_DSI003_SampleLocations_A
Print date: 09 Mar 2021 - 14:14

Data source: LPI: DCDB/DTDB, 2017. public_NSW_Imagery: © Department of Customer Service 2020.
Created by: tmorton

Appendix B – Results Table

Appendix B
Table A
In-Situ Waste Classification

				Metals												BTEXN						TRH - NEPM 2013						
				Arsenic	Arsenic TCLP	Cadmium	Chromium (III+VI)	Chromium TCLP	Copper	Lead	Lead TCLP	Mercury	Nickel	Nickel TCLP	Zinc	Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	F1 (C6-C10 minus BTEX)	C6-C10 Fraction	F2 (>C10-C16 minus Naphthalene)	>C10-C16 Fraction	F3 (>C16-C34 Fraction)	F4 (>C34-C40 Fraction)	>C10-C40 (Sum of Total)
				mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR				2		0.4	5		5	5		0.1	5		5	0.1	0.1	0.1	0.1	0.2	0.3	20	20	50	50	100	100	100
NSW EPA (2014) General Solid Waste CT1 (No Leaching)				100		20	100			100		4	40			10	288	600			1,000							
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)				400		80	400			400		16	160			40	1,152	2,400			4,000							
NSW EPA (2014) General Solid Waste SCC1 (Leachable Concentrations)				500	5		1900	5		1500	5		1050	2														
NSW EPA (2014) Restricted Solid Waste SCC2 (Leachable Concentrations)				2000	20		7600	20		6000	20		4200	8														
Location Code	**Date**	**Field ID**	**Depth**																									
COMPOSITE 1	11/02/2021	COMPOSITE 1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 2	11/02/2021	COMPOSITE 2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 3	11/02/2021	COMPOSITE 3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 4	12/02/2021	COMPOSITE 4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 5	12/02/2021	COMPOSITE 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
COMPOSITE 6	12/02/2021	COMPOSITE 6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01	11/02/2021	BH01_0.0-0.1	0 - 0.1	10	-	<0.4	23	-	35	41	-	0.1	20	-	60	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH01	11/02/2021	BH01_0.5-0.6	0.5 - 0.6	3.6	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH02	11/02/2021	BH02_0.3-0.4	0.3 - 0.4	5	-	<0.4	44	-	48	81	-	0.3	45	0.01	80	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH02	11/02/2021	BH02_1.9-2.0	1.9 - 2	6.7	-	<0.4	6.8	-	<5	<5	-	<0.1	5.7	-	11	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH02	11/02/2021	FD01		6.5	-	<0.4	8.5	-	<5	<5	-	<0.1	5.9	-	12	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH03	11/02/2021	BH03_0.0-0.1	0 - 0.1	13	-	2.6	22	-	91	330	<0.01	0.2	18	-	950	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH03	11/02/2021	BH03_0.5-0.6	0.5 - 0.6	7.7	-	<0.4	54	-	57	59	-	0.2	47	0.02	86	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH04	11/02/2021	BH04_0.3-0.4	0.3 - 0.4	700	-	2.2	77	-	1,900	1,400	-	<0.1	56	-	18,000	<0.1	0.2	0.3	0.5	1.5	2	<20	<20	316.4	320	660	<100	980
BH04	11/02/2021	BH04_1.0-1.1	1 - 1.1	3.9	-	<0.4	<5	-	<5	6.8	-	<0.1	<5	-	25	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH05	11/02/2021	BH05_0.3-0.4	0.3 - 0.4	4.5	-	<0.4	<5	-	<5	6	-	<0.1	<5	-	30	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH05	11/02/2021	BH05_1.0-1.1	1 - 1.1	8.4	-	<0.4	63	-	74	35	-	0.1	47	<0.01	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH06	11/02/2021	BH06_0.0-0.1	0 - 0.1	4.1	-	<0.4	11	-	14	13	-	<0.1	8	-	42	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH06	11/02/2021	BH06_1.0-1.1	1 - 1.1	3	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	6.7	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH07	11/02/2021	BH07_0.0-0.1	0 - 0.1	4.4	-	<0.4	<5	-	<5	7.2	-	<0.1	<5	-	25	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH07	11/02/2021	BH07_0.5-0.6	0.5 - 0.6	3.5	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH07	11/02/2021	FD02		4	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH08	11/02/2021	BH08_0.0-0.1	0 - 0.1	<2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH08	11/02/2021	BH08_2.0-2.1	2 - 2.1	<2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH09	11/02/2021	BH09_0.3-0.4	0.3 - 0.4	11	-	0.5	6.9	-	27	63	-	<0.1	6.7	-	180	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH09	11/02/2021	BH09_1.0-1.1	1 - 1.1	3.2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH10	12/02/2021	BH10_0.3-0.4	0.3 - 0.4	3.6	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH10	12/02/2021	BH10_1.3-1.4	1.3 - 1.4	10	-	<0.4	52	-	64	31	-	0.1	39	-	130	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH11	12/02/2021	BH11_0.0-0.1	0 - 0.1	5.5	-	<0.4	120	<0.05	28	44	-	<0.1	10	-	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	160	<100	160
BH11	12/02/2021	BH11_0.5-0.6	0.5 - 0.6	4	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH12	12/02/2021	BH12_0.0-0.1	0 - 0.1	5.8	-	<0.4	43	-	31	36	-	<0.1	18	-	140	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	150	<100	150
BH13	12/02/2021	BH13_0.5-0.6	0.5 - 0.6	3.8	-	<0.4	<5	-	<5	10	-	<0.1	<5	-	28	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH13	12/02/2021	BH13_2.0-2.1	2 - 2.1	4.6	-	<0.4	6.3	-	23	29	-	<0.1	5.1	-	33	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH13	12/02/2021	FD03		3.7	-	<0.4	<5	-	<5	7.1	-	<0.1	<5	-	18	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH14	12/02/2021	BH14_0.0-0.1	0 - 0.1	5.6	-	<0.4	31	-	25	45	-	<0.1	18	-	160	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH14	12/02/2021	BH14_1.0-1.1	1 - 1.1	<2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	8.8	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH15	12/02/2021	BH15_0.0-0.1	0 - 0.1	8	-	<0.4	34	-	31	55	-	<0.1	17	-	150	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<100	<100	<50	<50	190	<100	190
BH15	12/02/2021	BH15_1.4-1.5	1.4 - 1.5	6.3	-	<0.4	8.8	-	13	13	-	<0.1	7.2	-	44	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH16	12/02/2021	BH16_0.0-0.1	0 - 0.1	8.1	-	<0.4	14	-	17	18	-	<0.1	7.2	-	74	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<100	<100	<250	<250	<500	<500	<500
BH16	12/02/2021	BH16_1.7-1.8	1.7 - 1.8	5.6	-	<0.4	8.2	-	63	16	-	<0.1	7.2	-	46	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<100	<100	<50	<50	<100	<100	<100
BH17	12/02/2021	BH17_0.3-0.4	0.3 - 0.4	4.6	-	<0.4	<5	-	20	8.3	-	<0.1	<5	-	100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH17	12/02/2021	BH17_1.0-1.1	1 - 1.1	7.3	-	0.7	20	-	410	140	<0.01	0.4	17	-	280	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH17	12/02/2021	FD04		4.1	-	<0.4	<5	-	21	14	-	<0.1	<5	-	97	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH18	12/02/2021	BH18_0.0-0.1	0 - 0.1	3.6	-	<0.4	33	-	21	21	-	<0.1	20	-	80	<0.5	<0.5	<0.5	<0.5	<1	<1.5	<100	<100	<250	<250	<500	<500	<500
BH18	12/02/2021	BH18_0.3-0.4	0.3 - 0.4	3.8	-	<0.4	32	-	20	21	-	<0.1	26	-	50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	110	<100	110
BH19	12/02/2021	BH19_0.3-0.4	0.3 - 0.4	5.4	-	<0.4	20	-	16	21	-	<0.1	<5	-	80	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
BH19	12/02/2021	BH19_1.1-1.2	1.1 - 1.2	11	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
AVERAGE				19.51	-	0.128	15.71	-	64.87	54.71	-	0.03	9.596	-	451.9	<0.1	<0.1	0.006	0.011	0.032	0.043	<20	<20	6.732	6.809	23.62	<100	30.43
MAXIMUM				700	-	2.6	120	-	1900	1400	-	0.4	56	-	18000	<0.5	0.2	0.3	0.5	1.5	2	<100	<100	316.4	320	660	<500	980
MINIMUM				<2	-	<0.4	<5	-	<5	<5	-	<0.1	<5	-	<5	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<20	<20	<50	<50	<100	<100	<100
STANDARD DEVIATION				108.5	-	0.535	26.03	-	299.5	221.2	-	0.088	15.51	-	2802.6	0	0.031	0.047	0.078	0.234	0.312	0	0	49.41	49.98	109.1	0	156.6

Exceeds General Solid Waste Guidelines and is classified as "Restricted Solid Waste"

Exceeds Restricted Solid Waste Guidelines and is classified as "Hazardous Solid Waste"

Appendix B
Table A
In-Situ Waste Classification

	TRH - NEPM 1999					PAHs - standard 16																				
	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 (Sum of Total)	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo[b+j]fluoranthene	Benzo(k)fluoranthene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Naphthalene-PAH	Phenanthrene	Pyrene	PAHs (Sum of total) - Lab calc	Total 8 PAHs (as BaP TEQ)(zero LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ) (half LOR) - Lab Calc	Total 8 PAHs (as BaP TEQ)(full LOR) - Lab Calc	PCBs (Total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg
LOR	20	20	50	50	50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	500
NSW EPA (2014) General Solid Waste CT1 (No Leaching)	650[#1]				10,000[#1]					0.8													200				50,000
NSW EPA (2014) Restricted Solid Waste CT2 (No Leaching)	2,600[#1]				40,000[#1]					3.2													800				50,000
NSW EPA (2014) General Solid Waste SCC1 (Leachable Concentrations)																											
NSW EPA (2014) Restricted Solid Waste SCC2 (Leachable Concentrations)																											

Location Code	Date	Field ID	Depth																									
COMPOSITE 1	11/02/2021	COMPOSITE 1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 2	11/02/2021	COMPOSITE 2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 3	11/02/2021	COMPOSITE 3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 4	12/02/2021	COMPOSITE 4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 5	12/02/2021	COMPOSITE 5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
COMPOSITE 6	12/02/2021	COMPOSITE 6		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<500
BH01	11/02/2021	BH01_0.0-0.1	0 - 0.1	<20	<20	61	<50	61	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	1.6	<0.5	0.6	1.2	-
BH01	11/02/2021	BH01_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH02	11/02/2021	BH02_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH02	11/02/2021	BH02_1.9-2.0	1.9 - 2	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH02	11/02/2021	FD01		<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH03	11/02/2021	BH03_0.0-0.1	0 - 0.1	<20	<20	64	<50	64	<0.5	<0.5	<0.5	0.6	0.7	0.8	0.6	<0.5	0.6	<0.5	1.5	<0.5	<0.5	<0.5	0.8	1.4	7	0.9	1.2	1.5	-
BH03	11/02/2021	BH03_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH04	11/02/2021	BH04_0.3-0.4	0.3 - 0.4	<20	190	690	<50	880	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	3.6	3.9	1.5	0.5	6.6	<0.5	0.6	1.2	-
BH04	11/02/2021	BH04_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH05	11/02/2021	BH05_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH05	11/02/2021	BH05_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH06	11/02/2021	BH06_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH06	11/02/2021	BH06_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH07	11/02/2021	BH07_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH07	11/02/2021	BH07_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH07	11/02/2021	FD02		<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH08	11/02/2021	BH08_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH08	11/02/2021	BH08_2.0-2.1	2 - 2.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH09	11/02/2021	BH09_0.3-0.4	0.3 - 0.4	<20	<20	52	<50	52	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	0.7	2.1	<0.5	0.6	1.2	-
BH09	11/02/2021	BH09_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH10	12/02/2021	BH10_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH10	12/02/2021	BH10_1.3-1.4	1.3 - 1.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH11	12/02/2021	BH11_0.0-0.1	0 - 0.1	<20	<20	95	<50	95	<0.5	<0.5	<0.5	2.2	2.3	2.2	2	1.9	1.8	<0.5	4.6	<0.5	1.5	<0.5	<0.5	1.4	4.4	24.3	3.1	3.4	3.6	-
BH11	12/02/2021	BH11_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH12	12/02/2021	BH12_0.0-0.1	0 - 0.1	<20	<20	80	<50	80	<0.5	<0.5	<0.5	0.9	1	0.9	0.8	0.8	0.8	<0.5	1.9	<0.5	0.7	<0.5	<0.5	0.8	1.8	10.4	1.3	1.6	1.8	-
BH13	12/02/2021	BH13_0.5-0.6	0.5 - 0.6	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH13	12/02/2021	BH13_2.0-2.1	2 - 2.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH13	12/02/2021	FD03		<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH14	12/02/2021	BH14_0.0-0.1	0 - 0.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	0.5	0.6	0.6	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	0.5	1	4.2	0.7	1	1.3	-
BH14	12/02/2021	BH14_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH15	12/02/2021	BH15_0.0-0.1	0 - 0.1	<100	<20	170	<50	170	<0.5	<0.5	<0.5	<0.5	0.5	0.7	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<2.5	<0.5	<0.5	0.9	3.1	0.6	0.9	1.2	-
BH15	12/02/2021	BH15_1.4-1.5	1.4 - 1.5	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	1	2	<0.5	0.6	1.2	-
BH16	12/02/2021	BH16_0.0-0.1	0 - 0.1	<100	<100	<250	<250	<250	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH16	12/02/2021	BH16_1.7-1.8	1.7 - 1.8	<100	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH17	12/02/2021	BH17_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH17	12/02/2021	BH17_1.0-1.1	1 - 1.1	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	1.1	1.1	1	0.8	0.7	0.8	<0.5	1.6	<0.5	0.7	<0.5	<0.5	0.6	1.6	10	1.5	1.7	2	-
BH17	12/02/2021	FD04		<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH18	12/02/2021	BH18_0.0-0.1	0 - 0.1	<100	<100	<250	<250	<250	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH18	12/02/2021	BH18_0.3-0.4	0.3 - 0.4	<20	<20	75	<50	75	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<0.5	<2.5	<2.5	<2.5	<2.5	<2.5	3	6.1	-
BH19	12/02/2021	BH19_0.3-0.4	0.3 - 0.4	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-
BH19	12/02/2021	BH19_1.1-1.2	1.1 - 1.2	<20	<20	<50	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	-

AVERAGE				<20	4.043	27.38	<50	31.42553	<0.5	<0.5	<0.5	0.113	0.132	0.145	0.089	0.072	0.085	<0.5	0.319	<0.5	0.062	0.077	0.083	0.119	0.298	1.517	0.172	0.706	1.24	0
MAXIMUM				<100	190	690	<250	880	<2.5	<2.5	<2.5	2.2	2.3	2.2	2	1.9	1.8	<2.5	4.6	<2.5	1.5	3.6	3.9	1.5	4.4	24.3	3.1	3.4	6.1	0
MINIMUM				<20	190	52	<50	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	0
STANDARD DEVIATION				0	29.67	111.4	0	139.7912	0	0	0	0.412	0.438	0.429	0.361	0.334	0.335	0	0.852	0	0.275	0.562	0.609	0.365	0.812	4.487	0.583	0.604	0.849	0

Exceeds General Solid Waste Guidelines and is classified as "Restricted Solid Waste"
Exceeds Restricted Solid Waste Guidelines and is classified as "Hazardous Solid Waste

Appendix C – Laboratory Reports

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☑ **Sydney**
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Phone: +612 9900 8400
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☐ **Brisbane**
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Email: enviro.bris@mgtlabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD	Contact Name:	Ruth Madden	Purchase Order :	12545790
Office Address :	Level 3, 24 Honeysuckle Drive Newcastle	Project Manager :	Ruth Madden	PROJECT Number :	12545790
		Email for results :	ruth.madden@ghd.com	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 1: BH01_0.0-0.1, BH02_0.0-0.1 and BH03_0.0-0.1
COMP 2: BH04_0.3-0.4, BH05_0.3-0.4, BH06_0.0-0.1

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS
1	BH01_0.0-0.1	########	Soil	X	comp 1	X	
2	BH01_0.5-0.6	########	Soil	X			
3	BH01_1.0-1.1	########	Soil				
4	BH02_0.0-0.1	########	Soil		COMP 1		
5	BH02_0.3-0.4	########	Soil	X			
6	BH02_0.6-0.7	########	Soil				
7	BH02_1.0-1.1	########	Soil				
8	BH02_1.9-2.0	########	Soil	X			
9	BH03_0.0-0.1	########	Soil	X	COMP 1		
10	BH03_0.3-0.4	########	Soil				
11	BH03_0.5-0.6	########	Soil	X			
12	BH03_1.0-1.1	########	Soil				
13	BH03_2.0-2.1	########	Soil				
14	BH04_0.0-0.1	########	Soil				
15	BH04_0.3-0.4	########	Soil	X	COMP 2	X	
16	BH04_0.5-0.6	########	Soil				X

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Laboratory Staff

Relinquished By:	LT
Date & Time::	12/02/2021
Signature:	LT
Received By:	M.R
Date & Time:	15/2/21 10:30AM
Signature:	

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☒ 10 DAY ☐ Other:

Method Of Shipment

☒ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1°C
Report number: 774362

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Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
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Brisbane
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Melbourne
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD
Office Address : Level 3, 24 Honeysuckle Drive
Newcastle

Contact Name: Ruth Madden
Project Manager : Ruth Madden
Email for results : ruth.madden@ghd.com

Purchase Order : 12545790
PROJECT Number : 12545790
PROJECT Name :

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 3: BH07_0.0-0.1, BH08_0.0-0.1, BH09_0.3-0.4

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS
1	BH04_1.0-1.1	11/02/2021	Soil	X			
2	BH04_2.0-2.1	11/02/2021	Soil				
3	BH05_0.0-0.1	11/02/2021	Soil				
4	BH05_0.3-0.4	11/02/2021	Soil	X	COMP 2		
5	BH05_0.5-0.6	11/02/2021	Soil				
6	BH05_1.0-1.1	11/02/2021	Soil	X			
7	BH05_1.9-2.0	11/02/2021	Soil				
8	BH06_0.0-0.1	11/02/2021	Soil	X	COMP 2		X
9	BH06_0.3-0.4	11/02/2021	Soil				
10	BH06_0.5-0.6	11/02/2021	Soil				
11	BH06_1.0-1.1	11/02/2021	Soil	X			
12	BH06_2.0-2.1	11/02/2021	Soil				
13	BH07_0.0-0.1	11/02/2021	Soil	X	COMP 3	X	
14	BH07_0.3-0.4	11/02/2021	Soil				
15	BH07_0.5-0.6	11/02/2021	Soil	X			
16	BH07_1.0-1.1	11/02/2021	Soil				

Analytes

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Relinquished By: LT
Date & Time:: 12/02/2021
Signature: LT

Laboratory Staff
Received By: MR
Date & Time: 15/2/21 10:30AM
Signature:

Turn around time
1 DAY [ ] 2 DAY [ ] 3 DAY [ ]
5 DAY [X] 10 DAY [ ] Other: [ ]

Method Of Shipment
[X] Courier
[ ] Hand Delivered
[ ] Postal
Courier Consignment # :

Temperature on arrival: 21.1°C

Report number: 774362

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Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
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Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD	Contact Name:	Ruth Madden	Purchase Order :	12545790
Office Address :	Level 3, 24 Honeysuckle Drive Newcastle	Project Manager :	Ruth Madden	PROJECT Number :	12545790
		Email for results :	ruth.madden@ghd.com	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 4: BH10_0.3-0.4, BH11_0.0-0.1, BH12-0.0-0.1

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS
1	BH07_2.0-2.1	########	Soil				
2	BH08_0.0-0.1	########	Soil	X	COMP 3		X
3	BH08_0.3-0.4	########	Soil				
4	BH08_0.5-0.6	########	Soil				
5	BH08_1.0-1.1	########	Soil				
6	BH08_2.0-2.1	########	Soil	X			X
7	BH09_0.0-0.1	########	Soil				
8	BH09_0.3-0.4	########	Soil	X	COMP 3	X	
9	BH09_0.5-0.6	########	Soil				
10	BH09_1.0-1.1	########	Soil	X			
11	BH09_2.0-2.1	########	Soil				
12	BH10_0.0-0.1	########	Soil				
13	BH10_0.3-0.4	########	Soil	X	COMP 4	X	
14	BH10_0.5-0.6	########	Soil				
15	BH10_1.3-1.4	########	Soil	X			
16	BH10_2.0-2.1	########	Soil				

Analytes

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

	Laboratory Staff	Turn around time	Method Of Shipment	
Relinquished By: LT	Received By: MR	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☒ Courier	Temperature on arrival: 21.1°C
Date & Time:: 12/02/2021	Date & Time: 15/2/21 10:30AM	5 DAY ☒ 10 DAY ☐ Other: ☐	☐ Hand Delivered	
Signature: LT	Signature:		☐ Postal	Report number: 774362
			Courier Consignment # :	

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Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
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2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD	Contact Name:	Ruth Madden	Purchase Order :	12545790
Office Address :	Level 3, 24 Honeysuckle Drive Newcastle	Project Manager :	Ruth Madden	PROJECT Number :	12545790
		Email for results :	ruth.madden@ghd.com	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 5: BH13_0.5-0.6, BH17_0.3-0.4, BH18_0.3-0.4, BH19_0.3-0.4

Eurofins | mgt DI water batch number:

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

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

Analytes

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS	Containers:	Sample comments:
1	BH11_0.0-0.1	########	Soil	X	COMP 4				
2	BH11_0.3-0.4	########	Soil						
3	BH11_0.5-0.6	########	Soil	X					
4	BH11_1.3-1.4	########	Soil						
5	BH11_2.0-2.1	########	Soil						
6	BH12_0.0-0.1	########	Soil	X	COMP 4		X		
7	BH12_0.3-0.4	########	Soil						
8	BH12_0.5-0.6	########	Soil						
9	BH12_1.0-1.1	########	Soil	X					
10	BH12_1.1-1.2	########	Soil						
11	BH12_2.0-2.1	########	Soil						
12	BH13_0.0-0.1	########	Soil						
13	BH13_0.3-0.4	########	Soil						
14	BH13_0.5-0.6	########	Soil	X	COMP 5	X			
15	BH13_1.1-1.2	########	Soil						
16	BH13_2.0-2.1	########	Soil	X					

Containers:	1LP	250P	125P	1LA	40mL vial	125mL A	Jar

Relinquished By: LT
Date & Time:: 12/02/2021
Signature: LT

Laboratory Staff
Received By: MR
Date & Time: 15/2/21 10:30AM
Signature:

Turn around time
1 DAY ☐ 2 DAY ☒ 3 DAY ☐
5 DAY ☐ 10 DAY ☐ Other: ☐

Method Of Shipment
☒ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1°C
Report number: 774362

eurofins mgt

Sydney
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
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Email: enviro.syd@mgtlabmark.com.au

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	GHD	Contact Name:	Ruth Madden	Purchase Order :	12545790
Office Address :	Level 3, 24 Honeysuckle Drive Newcastle	Project Manager :	Ruth Madden	PROJECT Number :	12545790
		Email for results :	ruth.madden@ghd.com	PROJECT Name :	

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :
COMP 6: BH14_0.0-0.1, BH15_0.0-0.1, BH16_0.0-0.1

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS
1	BH14_0.0-0.1	########	Soil	X	COMP 6		
2	BH14_0.5-0.6	########	Soil				
3	BH14_1.0-1.1	########	Soil	X		X	X
4	BH14_1.7-1.8	########	Soil				
5	BH14_2.0-2.1	########	Soil				
6	BH15_0.0-0.1	########	Soil	X	COMP 6		
7	BH15_0.5-0.6	########	Soil				
8	BH15_1.4-1.5	########	Soil	X			
9	BH15_1.6-1.7	########	Soil				
10	BH15_2.0-2.1	########	Soil				
11	BH16_0.0-0.1	########	Soil	X	COMP 6		
12	BH16_0.3-0.4	########	Soil				
13	BH16_0.5-0.6	########	Soil				
14	BH16_1.4-1.5	########	Soil				
15	BH16_1.6-1.7	########	Soil				
16	BH16_1.7-1.8	########	Soil	X			

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Laboratory Staff

Relinquished By:	LT
Date & Time::	12/02/2021
Signature:	LT
Received By:	MR
Date & Time:	15/2/21 10:30AM
Signature:	

Turn around time

1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☒ 10 DAY ☐ Other: ☐

Method Of Shipment

☑ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1 °C

Report number: 774362

eurofins mgt

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD
Office Address : Level 3, 24 Honeysuckle Drive Newcastle

Contact Name: Ruth Madden
Project Manager : Ruth Madden
Email for results : ruth.madden@ghd.com

Purchase Order : 12545790
PROJECT Number : 12545790
PROJECT Name :

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS	BTEXN
1	BH16_2.0-2.1	########	Soil					
2	BH17_0.0-0.1	########	Soil					
3	BH17_0.3-0.4	########	Soil	X	COMP 5			
4	BH17_1.0-1.1	########	Soil	X				
5	BH17_1.5-1.6	########	Soil					
6	BH17_2.0-2.1	########	Soil					
7	BH18_0.0-0.1	########	Soil	X				
8	BH18_0.3-0.4	########	Soil	X	COMP 5			
9	BH19_0.0-0.1	########	Soil					
10	BH19_0.3-0.4	########	Soil	X	COMP 5		X	
11	BH19_1.1-1.2	########	Soil	X			X	
12	BH19_1.5-1.6	########	Soil					
13	BH19_2.0-2.1	########	Soil					
14	FD03	########	Soil	X				
15	FD04	########	Soil	X				
16	TS02	########	Soil					X

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Relinquished By: LT
Date & Time:: 12/02/2021
Signature: LT

Laboratory Staff
Received By: MR
Date & Time: 15/2/21 10:30 AM
Signature:

Turn around time
1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☒ 10 DAY ☐ Other:

Method Of Shipment
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☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1°C
Report number: 774362

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Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name : GHD
Office Address : Level 3, 24 Honeysuckle Drive Newcastle

Contact Name: Ruth Madden
Project Manager : Ruth Madden
Email for results : ruth.madden@ghd.com

Purchase Order : 12545790
PROJECT Number : 12545790
PROJECT Name :

COC Number :
Eurofins | mgt quote ID :
Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix	Suite B7 (TRH, BTEXN, PAH, Metals)	Suite B13 (OCP, PCB)	Asbestos	PFAS	BTEXN
1	TB02	12/02/2021	Soil					X
2	FD01	11/02/2021	Soil	X				
3	FD02	11/02/2021	Soil	X				
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

Analytes

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

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

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	

Sample comments:

Relinquished By: LT
Date & Time:: 12/02/2021
Signature: LT

Laboratory Staff
Received By: MR
Date & Time: 15/2/21 10:30AM
Signature:

Turn around time
1 DAY ☐ 2 DAY ☐ 3 DAY ☐
5 DAY ☒ 10 DAY ☐ Other: ☐

Method Of Shipment
☒ Courier
☐ Hand Delivered
☐ Postal
Courier Consignment # :

Temperature on arrival: 21.1°C
Report number: 774362

#AU04_Enviro_Sample_NSW

From: Ruth Madden <Ruth.Madden@ghd.com>
Sent: Wednesday, 17 February 2021 9:16 AM
To: #AU04_Enviro_Sample_NSW
Subject: RE: ATTN: Eurofins - Report 774362 : Site 12545790

Follow Up Flag: Follow up
Flag Status: Flagged

Hello,

The priority should be – B7, B13 then asbestos. B13 are composite samples so hopefully you have enough for that? Please analyse TS01 and TB01 for BTEXN.

Thanks,

Ruth

From: EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>
Sent: Tuesday, 16 February 2021 10:24 PM
To: Ruth Madden <Ruth.Madden@ghd.com>
Subject: ATTN: Eurofins - Report 774362 : Site 12545790

Dear Valued Client,

Some sample jars have been received less than half full (and without Asbestos bags), please be advised that there is a possibility that some samples may not be processed for requested analyses due to insufficient amount of sample. Please advise what analysis to prioritise between B7, B13 and Asbestos. Sample BH12_1.0-1.1 not received, analysis cancelled. Samples TS01 and TB01 received as extra, logged on hold.

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins Analytical Services Manager as soon as possible to make certain that they get changed.

Kind regards,
Mickael Ros
Sample Receipt

Eurofins | Environmental Testing
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066
AUSTRALIA
Phone: +61 02 9900 8421
Email: EnviroSampleNSW@eurofins.com
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Christchurch
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Phone : 0800 856 450
IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	BH01_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31894	X						X	X		
2	BH01_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31895							X	X		
3	BH02_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31897							X	X		
4	BH02_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31898							X	X		
5	BH03_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31899							X	X		
6	BH03_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31900							X	X		
7	BH04_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31901	X						X	X		
8	BH04_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31902		X								
9	BH04_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31903							X	X		

eurofins | Environment Testing

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IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
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NSW 2300

Project Name:
Project ID: 12545790

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Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
10	BH05_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31904							X	X		
11	BH05_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31905							X	X		
12	BH06_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31906							X	X		
13	BH06_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31907							X	X		
14	BH07_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31908	X						X	X		
15	BH07_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31909							X	X		
16	BH08_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31910							X	X		
17	BH08_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31911							X	X		
18	BH09_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31912	X						X	X		
19	BH09_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31913							X	X		
20	BH10_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31914	X						X	X		

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Project Name:
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Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
21	BH10_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31915							X	X		
22	BH11_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31916							X	X		
23	BH11_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31917							X	X		
24	BH12_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31918							X	X		
25	BH12_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31919			X							
26	BH13_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31920	X						X	X		
27	BH13_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31921							X	X		
28	BH14_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31922							X	X		
29	BH14_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31923	X						X	X		
30	BH15_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31924							X	X		
31	BH15_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31925							X	X		

eurofins | Environment Testing

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

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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

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IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
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Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
32	BH16_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31926							X	X		
33	BH16_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31927							X	X		
34	BH17_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31928							X	X		
35	BH17_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31929							X	X		
36	BH18_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31930							X	X		
37	BH18_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31931							X	X		
38	BH19_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31932							X	X		
39	BH19_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31933							X	X		
40	FD03	Feb 12, 2021		Soil	S21-Fe31934							X	X		
41	FD04	Feb 12, 2021		Soil	S21-Fe31935							X	X		
42	TS02	Feb 08, 2021		Soil	S21-Fe31936										X

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Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
43	TB02	Feb 08, 2021		Soil	S21-Fe31938				X						
44	FD01	Feb 11, 2021		Soil	S21-Fe31939							X	X		
45	FD02	Feb 11, 2021		Soil	S21-Fe31940							X	X		
46	COMPOSITE 1	Feb 11, 2021		Soil	S21-Fe31941					X		X			
47	COMPOSITE 2	Feb 11, 2021		Soil	S21-Fe31942					X		X			
48	COMPOSITE 3	Feb 11, 2021		Soil	S21-Fe31943					X		X			
49	COMPOSITE 4	Feb 12, 2021		Soil	S21-Fe31944					X		X			
50	COMPOSITE	Feb 12, 2021		Soil	S21-Fe31945					X		X			

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
	5														
51	COMPOSITE 6	Feb 12, 2021		Soil	S21-Fe31946					X		X			
52	BH01_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31947			X							
53	BH02_0.6-0.7	Feb 11, 2021		Soil	S21-Fe31948			X							
54	BH02_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31949			X							
55	BH03_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31950			X							
56	BH03_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31951			X							
57	BH03_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31952			X							
58	BH04_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31953			X							
59	BH04_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31954			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
60	BH05_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31955			X							
61	BH05_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31956			X							
62	BH05_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31957			X							
63	BH06_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31958			X							
64	BH06_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31959			X							
65	BH06_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31960			X							
66	BH07_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31961			X							
67	BH07_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31962			X							
68	BH07_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31963			X							
69	BH08_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31964			X							
70	BH08_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31965			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
71	BH08_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31966			X							
72	BH09_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31967			X							
73	BH09_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31968			X							
74	BH09_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31969			X							
75	BH10_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31970			X							
76	BH10_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31971			X							
77	BH10_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31972			X							
78	BH11_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31973			X							
79	BH11_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31974			X							
80	BH11_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31975			X							
81	BH12_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31976			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
82	BH12_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31977			X							
83	BH12_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31978			X							
84	BH12_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31979			X							
85	BH13_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31980			X							
86	BH13_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31981			X							
87	BH13_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31982			X							
88	BH14_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31983			X							
89	BH14_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31984			X							
90	BH14_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31985			X							
91	BH15_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31986			X							
92	BH15_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31987			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
93	BH15_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31988			X							
94	BH16_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31989			X							
95	BH16_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31990			X							
96	BH16_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31991			X							
97	BH16_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31992			X							
98	BH16_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31993			X							
99	BH17_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31994			X							
100	BH17_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31995			X							
101	BH17_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31996			X							
102	BH19_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31997			X							
103	BH19_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31998			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
104	BH19_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31999			X							
105	TS01	Feb 08, 2021		Soil	S21-Fe32000									X	
106	TB01	Feb 08, 2021		Soil	S21-Fe32001						X				
107	BH_0.0-0.1	Feb 08, 2021		Soil	S21-Fe41426			X							
Test Counts						7	1	55	1	6	1	47	41	1	1

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Sample Receipt Advice

Company name:	GHD Pty Ltd NEWCASTLE
Contact name:	Ruth Madden
Project name:	Not provided
Project ID:	12545790
Turnaround time:	5 Day
Date/Time received	Feb 15, 2021 10:30 AM
Eurofins reference	774362

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 21.1 degrees Celsius.
✗	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
✗	Split sample sent to requested external lab.
✗	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

Some sample jars have been received less than half full (and without Asbestos bags), please be advised that there is a possibility that some samples may not be processed for requested analyses due to insufficient amount of sample. Please advise what analysis to prioritise between B7, B13 and Asbestos. Sample BH12_1.0-1.1 not received, analysis cancelled. Received only 2x PFAS tubs for samples BH_0.0-0.1 and BH12_1-1.1 that were not booked for PFAS analysis (kept on hold), other PFAS analyses cancelled.

Contact

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

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Ruth Madden - ruth.madden@ghd.com.

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

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention:	Ruth Madden
Report	774362-AID
Project Name	
Project ID	12545790
Received Date	Feb 15, 2021
Date Reported	Feb 23, 2021

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name
Project ID 12545790
Date Sampled Feb 11, 2021 to Feb 12, 2021
Report 774362-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH01_0.0-0.1	21-Fe31894	Feb 11, 2021	Approximate Sample 62g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH04_0.3-0.4	21-Fe31901	Feb 11, 2021	Approximate Sample 7g Sample consisted of: Brown coarse-grained soil, bitumen like material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH07_0.0-0.1	21-Fe31908	Feb 11, 2021	Approximate Sample 36g Sample consisted of: Brown coarse-grained sandy soil, concrete, cement, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH09_0.3-0.4	21-Fe31912	Feb 11, 2021	Approximate Sample 34g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH10_0.3-0.4	21-Fe31914	Feb 12, 2021	Approximate Sample 23g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH13_0.5-0.6	21-Fe31920	Feb 12, 2021	Approximate Sample 18g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH14_1.0-1.1	21-Fe31923	Feb 12, 2021	Approximate Sample 24g Sample consisted of: Brown coarse-grained sandy soil, shell material and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Feb 16, 2021	Indefinite

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Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	BH01_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31894	X						X	X		
2	BH01_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31895							X	X		
3	BH02_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31897							X	X		
4	BH02_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31898							X	X		
5	BH03_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31899							X	X		
6	BH03_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31900							X	X		
7	BH04_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31901	X						X	X		
8	BH04_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31902		X								
9	BH04_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31903							X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
10	BH05_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31904							X	X		
11	BH05_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31905							X	X		
12	BH06_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31906							X	X		
13	BH06_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31907							X	X		
14	BH07_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31908	X						X	X		
15	BH07_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31909							X	X		
16	BH08_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31910							X	X		
17	BH08_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31911							X	X		
18	BH09_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31912	X						X	X		
19	BH09_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31913							X	X		
20	BH10_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31914	X						X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
21	BH10_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31915							X	X		
22	BH11_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31916							X	X		
23	BH11_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31917							X	X		
24	BH12_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31918							X	X		
25	BH12_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31919			X							
26	BH13_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31920	X						X	X		
27	BH13_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31921							X	X		
28	BH14_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31922							X	X		
29	BH14_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31923	X						X	X		
30	BH15_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31924							X	X		
31	BH15_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31925							X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
32	BH16_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31926							X	X		
33	BH16_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31927							X	X		
34	BH17_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31928							X	X		
35	BH17_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31929							X	X		
36	BH18_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31930							X	X		
37	BH18_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31931							X	X		
38	BH19_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31932							X	X		
39	BH19_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31933							X	X		
40	FD03	Feb 12, 2021		Soil	S21-Fe31934							X	X		
41	FD04	Feb 12, 2021		Soil	S21-Fe31935							X	X		
42	TS02	Feb 08, 2021		Soil	S21-Fe31936										X

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
43	TB02	Feb 08, 2021		Soil	S21-Fe31938				X						
44	FD01	Feb 11, 2021		Soil	S21-Fe31939							X	X		
45	FD02	Feb 11, 2021		Soil	S21-Fe31940							X	X		
46	COMPOSITE 1	Feb 11, 2021		Soil	S21-Fe31941					X		X			
47	COMPOSITE 2	Feb 11, 2021		Soil	S21-Fe31942					X		X			
48	COMPOSITE 3	Feb 11, 2021		Soil	S21-Fe31943					X		X			
49	COMPOSITE 4	Feb 12, 2021		Soil	S21-Fe31944					X		X			
50	COMPOSITE	Feb 12, 2021		Soil	S21-Fe31945					X		X			

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
	5														
51	COMPOSITE 6	Feb 12, 2021		Soil	S21-Fe31946					X		X			
52	BH01_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31947			X							
53	BH02_0.6-0.7	Feb 11, 2021		Soil	S21-Fe31948			X							
54	BH02_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31949			X							
55	BH03_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31950			X							
56	BH03_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31951			X							
57	BH03_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31952			X							
58	BH04_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31953			X							
59	BH04_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31954			X							

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
60	BH05_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31955			X							
61	BH05_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31956			X							
62	BH05_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31957			X							
63	BH06_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31958			X							
64	BH06_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31959			X							
65	BH06_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31960			X							
66	BH07_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31961			X							
67	BH07_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31962			X							
68	BH07_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31963			X							
69	BH08_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31964			X							
70	BH08_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31965			X							

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IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
71	BH08_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31966			X							
72	BH09_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31967			X							
73	BH09_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31968			X							
74	BH09_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31969			X							
75	BH10_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31970			X							
76	BH10_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31971			X							
77	BH10_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31972			X							
78	BH11_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31973			X							
79	BH11_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31974			X							
80	BH11_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31975			X							
81	BH12_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31976			X							

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NSW 2300

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Project ID: 12545790

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Eurofins Analytical Services Manager : Andrew Black

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
82	BH12_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31977			X							
83	BH12_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31978			X							
84	BH12_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31979			X							
85	BH13_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31980			X							
86	BH13_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31981			X							
87	BH13_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31982			X							
88	BH14_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31983			X							
89	BH14_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31984			X							
90	BH14_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31985			X							
91	BH15_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31986			X							
92	BH15_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31987			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
93	BH15_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31988			X							
94	BH16_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31989			X							
95	BH16_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31990			X							
96	BH16_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31991			X							
97	BH16_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31992			X							
98	BH16_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31993			X							
99	BH17_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31994			X							
100	BH17_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31995			X							
101	BH17_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31996			X							
102	BH19_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31997			X							
103	BH19_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31998			X							

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Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
104	BH19_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31999			X							
105	TS01	Feb 08, 2021		Soil	S21-Fe32000									X	
106	TB01	Feb 08, 2021		Soil	S21-Fe32001						X				
107	BH_0.0-0.1	Feb 08, 2021		Soil	S21-Fe41426			X							
Test Counts						7	1	55	1	6	1	47	41	1	1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

Units

% w/w: weight for weight basis	grams per kilogram
Filter loading:	fibres/100 graticule areas
Reported Concentration:	fibres/mL
Flowrate:	L/min

Terms

Dry	Sample is dried by heating prior to analysis
LOR	Limit of Reporting
COC	Chain of Custody
SRA	Sample Receipt Advice
ISO	International Standards Organisation
AS	Australian Standards
WA DOH	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
NEPM	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
AF	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to “non-bonded / friable”.
FA	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres in the matrix.

Comments

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

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N/A	Not applicable

Asbestos Counter/Identifier:

Sayeed Abu	Senior Analyst-Asbestos (NSW)

Authorised by:

Chamath JHM Annakkage	Senior Analyst-Asbestos (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention: **Ruth Madden**

Report **774362-S**
Project name
Project ID 12545790
Received Date Feb 15, 2021

Client Sample ID			**BH01_0.0-0.1**	**BH01_0.5-0.6**	**BH02_0.3-0.4**	**BH02_1.9-2.0**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**S21-Fe31894**	**S21-Fe31895**	**S21-Fe31897**	**S21-Fe31898**
Date Sampled			**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	61	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	61	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	77	97	96	96
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH01_0.0-0.1	BH01_0.5-0.6	BH02_0.3-0.4	BH02_1.9-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31894	S21-Fe31895	S21-Fe31897	S21-Fe31898
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	1.6	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	51	78	76	81
p-Terphenyl-d14 (surr.)	1	%	77	78	76	82
Heavy Metals						
Arsenic	2	mg/kg	10	3.6	5.0	6.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	23	< 5	44	6.8
Copper	5	mg/kg	35	< 5	48	< 5
Lead	5	mg/kg	41	< 5	81	< 5
Mercury	0.1	mg/kg	0.1	< 0.1	0.3	< 0.1
Nickel	5	mg/kg	20	< 5	45	5.7
Zinc	5	mg/kg	60	< 5	80	11
% Moisture	1	%	13	9.1	14	23

Client Sample ID			BH03_0.0-0.1	BH03_0.5-0.6	BH04_0.3-0.4	BH04_1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31899	S21-Fe31900	S21-Fe31901	S21-Fe31903
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	190	< 20
TRH C15-C28	50	mg/kg	64	< 50	690	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	64	< 50	880	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	0.2	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	0.3	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	1.5	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	0.5	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	2.0	< 0.3
4-Bromofluorobenzene (surr.)	1	%	87	84	100	100
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	3.6	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	320	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	316.4	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	660	< 100

Client Sample ID			BH03_0.0-0.1	BH03_0.5-0.6	BH04_0.3-0.4	BH04_1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31899	S21-Fe31900	S21-Fe31901	S21-Fe31903
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	980	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.2	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.5	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	1.5	< 0.5	0.7	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	3.9	< 0.5
Phenanthrene	0.5	mg/kg	0.8	< 0.5	1.5	< 0.5
Pyrene	0.5	mg/kg	1.4	< 0.5	0.5	< 0.5
Total PAH*	0.5	mg/kg	7	< 0.5	6.6	< 0.5
2-Fluorobiphenyl (surr.)	1	%	76	66	70	85
p-Terphenyl-d14 (surr.)	1	%	77	65	69	83
Heavy Metals						
Arsenic	2	mg/kg	13	7.7	700	3.9
Cadmium	0.4	mg/kg	2.6	< 0.4	2.2	< 0.4
Chromium	5	mg/kg	22	54	77	< 5
Copper	5	mg/kg	91	57	1900	< 5
Lead	5	mg/kg	330	59	1400	6.8
Mercury	0.1	mg/kg	0.2	0.2	< 0.1	< 0.1
Nickel	5	mg/kg	18	47	56	< 5
Zinc	5	mg/kg	950	86	18000	25
% Moisture	1	%	16	12	10	8.0

Client Sample ID			BH05_0.3-0.4	BH05_1.0-1.1	BH06_0.0-0.1	BH06_1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31904	S21-Fe31905	S21-Fe31906	S21-Fe31907
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50

Client Sample ID			BH05_0.3-0.4	BH05_1.0-1.1	BH06_0.0-0.1	BH06_1.0-1.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31904	S21-Fe31905	S21-Fe31906	S21-Fe31907
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	98	86	89	96
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	75	77	71	67
p-Terphenyl-d14 (surr.)	1	%	76	78	77	70
Heavy Metals						
Arsenic	2	mg/kg	4.5	8.4	4.1	3.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	63	11	< 5
Copper	5	mg/kg	< 5	74	14	< 5
Lead	5	mg/kg	6.0	35	13	< 5
Mercury	0.1	mg/kg	< 0.1	0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	47	8.0	< 5
Zinc	5	mg/kg	30	100	42	6.7
% Moisture	1	%	7.3	26	27	6.9

Client Sample ID			BH07_0.0-0.1	BH07_0.5-0.6	BH08_0.0-0.1	BH08_2.0-2.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31908	S21-Fe31909	S21-Fe31910	S21-Fe31911
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	97	94	80	85
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	76	76	79	67
p-Terphenyl-d14 (surr.)	1	%	79	78	83	72

Client Sample ID			BH07_0.0-0.1	BH07_0.5-0.6	BH08_0.0-0.1	BH08_2.0-2.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31908	S21-Fe31909	S21-Fe31910	S21-Fe31911
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.4	3.5	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	< 5	< 5	< 5
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	7.2	< 5	< 5	< 5
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	25	5.0	< 5	< 5
% Moisture	1	%	5.4	6.4	15	11

Client Sample ID			BH09_0.3-0.4	BH09_1.0-1.1	BH10_0.3-0.4	BH10_1.3-1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31912	S21-Fe31913	S21-Fe31914	S21-Fe31915
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	52	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	52	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	84	87	100	87
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH09_0.3-0.4	BH09_1.0-1.1	BH10_0.3-0.4	BH10_1.3-1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31912	S21-Fe31913	S21-Fe31914	S21-Fe31915
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	0.7	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	2.1	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	65	79	69	76
p-Terphenyl-d14 (surr.)	1	%	76	82	74	86
Heavy Metals						
Arsenic	2	mg/kg	11	3.2	3.6	10
Cadmium	0.4	mg/kg	0.5	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	6.9	< 5	< 5	52
Copper	5	mg/kg	27	< 5	< 5	64
Lead	5	mg/kg	63	< 5	< 5	31
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1
Nickel	5	mg/kg	6.7	< 5	< 5	39
Zinc	5	mg/kg	180	< 5	< 5	130
% Moisture	1	%	3.3	7.3	2.5	29

Client Sample ID			BH11_0.0-0.1	BH11_0.5-0.6	BH12_0.0-0.1	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31916	S21-Fe31917	S21-Fe31918	S21-Fe31920
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	95	< 50	80	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	95	< 50	80	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	89	80	97	105

Client Sample ID			BH11_0.0-0.1	BH11_0.5-0.6	BH12_0.0-0.1	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31916	S21-Fe31917	S21-Fe31918	S21-Fe31920
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	160	< 100	150	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	160	< 100	150	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	3.1	< 0.5	1.3	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	3.4	0.6	1.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	3.6	1.2	1.8	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	2.2	< 0.5	0.9	< 0.5
Benzo(a)pyrene	0.5	mg/kg	2.3	< 0.5	1.0	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	2.2	< 0.5	0.9	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	1.9	< 0.5	0.8	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	2.0	< 0.5	0.8	< 0.5
Chrysene	0.5	mg/kg	1.8	< 0.5	0.8	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	4.6	< 0.5	1.9	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	1.5	< 0.5	0.7	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	1.4	< 0.5	0.8	< 0.5
Pyrene	0.5	mg/kg	4.4	< 0.5	1.8	< 0.5
Total PAH*	0.5	mg/kg	24.3	< 0.5	10.4	< 0.5
2-Fluorobiphenyl (surr.)	1	%	74	69	80	73
p-Terphenyl-d14 (surr.)	1	%	77	69	73	70
Heavy Metals						
Arsenic	2	mg/kg	5.5	4.0	5.8	3.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	120	< 5	43	< 5
Copper	5	mg/kg	28	< 5	31	< 5
Lead	5	mg/kg	44	< 5	36	10
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	10	< 5	18	< 5
Zinc	5	mg/kg	100	< 5	140	28
% Moisture	1	%	9.4	9.9	7.3	8.4

Client Sample ID			BH13_2.0-2.1	BH14_0.0-0.1	BH14_1.0-1.1	BH15_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31921	S21-Fe31922	S21-Fe31923	S21-Fe31924
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 100
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	170
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	170
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.5
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 1
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.5
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 1.5
4-Bromofluorobenzene (surr.)	1	%	84	83	71	94
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 2.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 100
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 100
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	190
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	190
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	0.7	< 0.5	0.6
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	1.0	0.6	0.9
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.3	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	0.6	< 0.5	0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	0.6	< 0.5	0.7
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	1.0	< 0.5	1.0
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	1.0	< 0.5	0.9
Total PAH*	0.5	mg/kg	< 0.5	4.2	< 0.5	3.1
2-Fluorobiphenyl (surr.)	1	%	81	85	77	69
p-Terphenyl-d14 (surr.)	1	%	81	79	76	88

Client Sample ID			BH13_2.0-2.1	BH14_0.0-0.1	BH14_1.0-1.1	BH15_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31921	S21-Fe31922	S21-Fe31923	S21-Fe31924
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.6	5.6	< 2	8.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	6.3	31	< 5	34
Copper	5	mg/kg	23	25	< 5	31
Lead	5	mg/kg	29	45	< 5	55
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	5.1	18	< 5	17
Zinc	5	mg/kg	33	160	8.8	150
% Moisture	1	%	22	8.4	13	9.9

Client Sample ID			BH15_1.4-1.5	BH16_0.0-0.1	BH16_1.7-1.8	BH17_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31925	S21-Fe31926	S21-Fe31927	S21-Fe31928
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 100	< 100	< 20
TRH C10-C14	20	mg/kg	< 20	< 100	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 250	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 250	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 250	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.5	< 0.5	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.5	< 0.5	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.5	< 0.5	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 1	< 1	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.5	< 0.5	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 1.5	< 1.5	< 0.3
4-Bromofluorobenzene (surr.)	1	%	77	INT	72	84
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 2.5	< 2.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 100	< 100	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 100	< 100	< 20
TRH >C10-C16	50	mg/kg	< 50	< 250	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 250	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 500	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 500	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 500	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH15_1.4-1.5	BH16_0.0-0.1	BH16_1.7-1.8	BH17_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31925	S21-Fe31926	S21-Fe31927	S21-Fe31928
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	1.0	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	1.0	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	2	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	77	80	66	67
p-Terphenyl-d14 (surr.)	1	%	105	88	81	80
Heavy Metals						
Arsenic	2	mg/kg	6.3	8.1	5.6	4.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.8	14	8.2	< 5
Copper	5	mg/kg	13	17	63	20
Lead	5	mg/kg	13	18	16	8.3
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.2	7.2	7.2	< 5
Zinc	5	mg/kg	44	74	46	100
% Moisture	1	%	15	9.2	15	3.6

Client Sample ID			BH17_1.0-1.1	BH18_0.0-0.1	BH18_0.3-0.4	BH19_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31929	S21-Fe31930	S21-Fe31931	S21-Fe31932
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 100	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 100	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 250	75	< 50
TRH C29-C36	50	mg/kg	< 50	< 250	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 250	75	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.5	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.5	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.5	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 1	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.5	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 1.5	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	79	88	68	75

Client Sample ID			BH17_1.0-1.1	BH18_0.0-0.1	BH18_0.3-0.4	BH19_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31929	S21-Fe31930	S21-Fe31931	S21-Fe31932
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 2.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 100	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 100	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 250	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 250	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 500	110	< 100
TRH >C34-C40	100	mg/kg	< 100	< 500	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 500	110	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.5	< 0.5	< 2.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.7	0.6	3.0	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	2.0	1.2	6.1	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	1.1	< 0.5	< 2.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	1.1	< 0.5	< 2.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	1.0	< 0.5	< 2.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	0.7	< 0.5	< 2.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	0.8	< 0.5	< 2.5	< 0.5
Chrysene	0.5	mg/kg	0.8	< 0.5	< 2.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Fluoranthene	0.5	mg/kg	1.6	< 0.5	< 2.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	0.7	< 0.5	< 2.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 2.5	< 0.5
Phenanthrene	0.5	mg/kg	0.6	< 0.5	< 2.5	< 0.5
Pyrene	0.5	mg/kg	1.6	< 0.5	< 2.5	< 0.5
Total PAH*	0.5	mg/kg	10	< 0.5	< 2.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	68	66	71	71
p-Terphenyl-d14 (surr.)	1	%	84	81	77	86
Heavy Metals						
Arsenic	2	mg/kg	7.3	3.6	3.8	5.4
Cadmium	0.4	mg/kg	0.7	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	20	33	32	20
Copper	5	mg/kg	410	21	20	16
Lead	5	mg/kg	140	21	21	21
Mercury	0.1	mg/kg	0.4	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	17	20	26	< 5
Zinc	5	mg/kg	280	80	50	80
% Moisture	1	%	14	5.6	7.3	4.0

Client Sample ID			BH19_1.1-1.2	FD03	FD04	TS02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31933	S21-Fe31934	S21-Fe31935	S21-Fe31936
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 08, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	-
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	80	69	71	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	63	70	61	-
p-Terphenyl-d14 (surr.)	1	%	76	89	79	-

Client Sample ID			BH19_1.1-1.2	FD03	FD04	TS02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31933	S21-Fe31934	S21-Fe31935	S21-Fe31936
Date Sampled			Feb 12, 2021	Feb 12, 2021	Feb 12, 2021	Feb 08, 2021
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	11	3.7	4.1	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	< 5	< 5	< 5	-
Copper	5	mg/kg	< 5	< 5	21	-
Lead	5	mg/kg	< 5	7.1	14	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	< 5	< 5	< 5	-
Zinc	5	mg/kg	< 5	18	97	-
% Moisture	1	%	4.6	3.4	3.4	-
BTEX						
Benzene	1	%	-	-	-	110
Ethylbenzene	1	%	-	-	-	120
m&p-Xylenes	1	%	-	-	-	120
o-Xylene	1	%	-	-	-	120
Toluene	1	%	-	-	-	110
Xylenes - Total	1	%	-	-	-	120
4-Bromofluorobenzene (surr.)	1	%	-	-	-	72

Client Sample ID			TB02	FD01	FD02	COMPOSITE 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31938	S21-Fe31939	S21-Fe31940	S21-Fe31941
Date Sampled			Feb 08, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	-
TRH C10-C14	20	mg/kg	-	< 20	< 20	-
TRH C15-C28	50	mg/kg	-	< 50	< 50	-
TRH C29-C36	50	mg/kg	-	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	-	< 50	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	72	67	68	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	-	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	-
TRH >C10-C16	50	mg/kg	-	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	-
TRH >C16-C34	100	mg/kg	-	< 100	< 100	-
TRH >C34-C40	100	mg/kg	-	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	-

Client Sample ID			TB02	FD01	FD02	COMPOSITE 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31938	S21-Fe31939	S21-Fe31940	S21-Fe31941
Date Sampled			Feb 08, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	-
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	-	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	-	84	78	-
p-Terphenyl-d14 (surr.)	1	%	-	82	89	-
Heavy Metals						
Arsenic	2	mg/kg	-	6.5	4.0	-
Cadmium	0.4	mg/kg	-	< 0.4	< 0.4	-
Chromium	5	mg/kg	-	8.5	< 5	-
Copper	5	mg/kg	-	< 5	< 5	-
Lead	5	mg/kg	-	< 5	< 5	-
Mercury	0.1	mg/kg	-	< 0.1	< 0.1	-
Nickel	5	mg/kg	-	5.9	< 5	-
Zinc	5	mg/kg	-	12	8.0	-
% Moisture	1	%	-	20	5.6	18
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	-	< 0.05
a-BHC	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
b-BHC	0.05	mg/kg	-	-	-	< 0.05
d-BHC	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05

Client Sample ID			TB02	FD01	FD02	COMPOSITE 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31938	S21-Fe31939	S21-Fe31940	S21-Fe31941
Date Sampled			Feb 08, 2021	Feb 11, 2021	Feb 11, 2021	Feb 11, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
g-BHC (Lindane)	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.2	mg/kg	-	-	-	< 0.2
Toxaphene	0.1	mg/kg	-	-	-	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	-	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	-	< 0.2
Dibutylchlorendate (surr.)	1	%	-	-	-	138
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	111
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1242	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1248	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1254	0.5	mg/kg	-	-	-	< 0.5
Aroclor-1260	0.5	mg/kg	-	-	-	< 0.5
Total PCB*	0.5	mg/kg	-	-	-	< 0.5
Dibutylchlorendate (surr.)	1	%	-	-	-	138
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	111

Client Sample ID			COMPOSITE 2	COMPOSITE 3	COMPOSITE 4	COMPOSITE 5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31942	S21-Fe31943	S21-Fe31944	S21-Fe31945
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
% Moisture	1	%	11	9.5	7.0	5.4
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			COMPOSITE 2	COMPOSITE 3	COMPOSITE 4	COMPOSITE 5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31942	S21-Fe31943	S21-Fe31944	S21-Fe31945
Date Sampled			Feb 11, 2021	Feb 11, 2021	Feb 12, 2021	Feb 12, 2021
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Dibutylchlorendate (surr.)	1	%	127	110	63	68
Tetrachloro-m-xylene (surr.)	1	%	101	95	89	89
Polychlorinated Biphenyls						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	127	110	63	68
Tetrachloro-m-xylene (surr.)	1	%	101	95	89	89

Client Sample ID			COMPOSITE 6	TS01	TB01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31946	S21-Fe32000	S21-Fe32001
Date Sampled			Feb 12, 2021	Feb 08, 2021	Feb 08, 2021
Test/Reference	LOR	Unit			
BTEX					
Benzene	0.1	mg/kg	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1
Xylenes - Total*	0.3	mg/kg	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	68
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	-	-	< 0.5
% Moisture	1	%	8.2	-	-
BTEX					
Benzene	1	%	-	110	-
Ethylbenzene	1	%	-	130	-
m&p-Xylenes	1	%	-	130	-
o-Xylene	1	%	-	130	-
Toluene	1	%	-	110	-
Xylenes - Total	1	%	-	130	-
4-Bromofluorobenzene (surr.)	1	%	-	58	-

Client Sample ID			COMPOSITE 6	TS01	TB01
Sample Matrix			Soil	Soil	Soil
Eurofins Sample No.			S21-Fe31946	S21-Fe32000	S21-Fe32001
Date Sampled			Feb 12, 2021	Feb 08, 2021	Feb 08, 2021
Test/Reference	LOR	Unit			
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-
Methoxychlor	0.2	mg/kg	< 0.2	-	-
Toxaphene	0.1	mg/kg	< 0.1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	-	-
Dibutylchlorendate (surr.)	1	%	69	-	-
Tetrachloro-m-xylene (surr.)	1	%	84	-	-
Polychlorinated Biphenyls					
Aroclor-1016	0.5	mg/kg	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	-	-
Total PCB*	0.5	mg/kg	< 0.5	-	-
Dibutylchlorendate (surr.)	1	%	69	-	-
Tetrachloro-m-xylene (surr.)	1	%	84	-	-
Total Recoverable Hydrocarbons					
Naphthalene	1	%	-	120	-

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Feb 19, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Feb 16, 2021	14 Days
- Method: LTM-GEN-7080 Moisture			
Organochlorine Pesticides	Sydney	Feb 19, 2021	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Feb 19, 2021	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			

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Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**										
1	BH01_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31894	X						X	X		
2	BH01_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31895							X	X		
3	BH02_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31897							X	X		
4	BH02_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31898							X	X		
5	BH03_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31899							X	X		
6	BH03_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31900							X	X		
7	BH04_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31901	X						X	X		
8	BH04_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31902		X								
9	BH04_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31903							X	X		

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Company Name: GHD Pty Ltd NEWCASTLE
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Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
10	BH05_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31904							X	X		
11	BH05_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31905							X	X		
12	BH06_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31906							X	X		
13	BH06_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31907							X	X		
14	BH07_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31908	X						X	X		
15	BH07_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31909							X	X		
16	BH08_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31910							X	X		
17	BH08_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31911							X	X		
18	BH09_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31912	X						X	X		
19	BH09_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31913							X	X		
20	BH10_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31914	X						X	X		

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
21	BH10_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31915							X	X		
22	BH11_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31916							X	X		
23	BH11_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31917							X	X		
24	BH12_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31918							X	X		
25	BH12_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31919			X							
26	BH13_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31920	X						X	X		
27	BH13_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31921							X	X		
28	BH14_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31922							X	X		
29	BH14_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31923	X						X	X		
30	BH15_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31924							X	X		
31	BH15_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31925							X	X		

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
32	BH16_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31926							X	X		
33	BH16_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31927							X	X		
34	BH17_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31928							X	X		
35	BH17_1.0-1.1	Feb 12, 2021		Soil	S21-Fe31929							X	X		
36	BH18_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31930							X	X		
37	BH18_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31931							X	X		
38	BH19_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31932							X	X		
39	BH19_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31933							X	X		
40	FD03	Feb 12, 2021		Soil	S21-Fe31934							X	X		
41	FD04	Feb 12, 2021		Soil	S21-Fe31935							X	X		
42	TS02	Feb 08, 2021		Soil	S21-Fe31936										X

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
43	TB02	Feb 08, 2021		Soil	S21-Fe31938				X						
44	FD01	Feb 11, 2021		Soil	S21-Fe31939							X	X		
45	FD02	Feb 11, 2021		Soil	S21-Fe31940							X	X		
46	COMPOSITE 1	Feb 11, 2021		Soil	S21-Fe31941					X		X			
47	COMPOSITE 2	Feb 11, 2021		Soil	S21-Fe31942					X		X			
48	COMPOSITE 3	Feb 11, 2021		Soil	S21-Fe31943					X		X			
49	COMPOSITE 4	Feb 12, 2021		Soil	S21-Fe31944					X		X			
50	COMPOSITE	Feb 12, 2021		Soil	S21-Fe31945					X		X			

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
	5														
51	COMPOSITE 6	Feb 12, 2021		Soil	S21-Fe31946					X		X			
52	BH01_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31947			X							
53	BH02_0.6-0.7	Feb 11, 2021		Soil	S21-Fe31948			X							
54	BH02_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31949			X							
55	BH03_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31950			X							
56	BH03_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31951			X							
57	BH03_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31952			X							
58	BH04_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31953			X							
59	BH04_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31954			X							

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Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
60	BH05_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31955			X							
61	BH05_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31956			X							
62	BH05_1.9-2.0	Feb 11, 2021		Soil	S21-Fe31957			X							
63	BH06_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31958			X							
64	BH06_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31959			X							
65	BH06_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31960			X							
66	BH07_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31961			X							
67	BH07_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31962			X							
68	BH07_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31963			X							
69	BH08_0.3-0.4	Feb 11, 2021		Soil	S21-Fe31964			X							
70	BH08_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31965			X							

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
71	BH08_1.0-1.1	Feb 11, 2021		Soil	S21-Fe31966			X							
72	BH09_0.0-0.1	Feb 11, 2021		Soil	S21-Fe31967			X							
73	BH09_0.5-0.6	Feb 11, 2021		Soil	S21-Fe31968			X							
74	BH09_2.0-2.1	Feb 11, 2021		Soil	S21-Fe31969			X							
75	BH10_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31970			X							
76	BH10_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31971			X							
77	BH10_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31972			X							
78	BH11_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31973			X							
79	BH11_1.3-1.4	Feb 12, 2021		Soil	S21-Fe31974			X							
80	BH11_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31975			X							
81	BH12_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31976			X							

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Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
82	BH12_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31977			X							
83	BH12_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31978			X							
84	BH12_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31979			X							
85	BH13_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31980			X							
86	BH13_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31981			X							
87	BH13_1.1-1.2	Feb 12, 2021		Soil	S21-Fe31982			X							
88	BH14_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31983			X							
89	BH14_1.7-1.8	Feb 12, 2021		Soil	S21-Fe31984			X							
90	BH14_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31985			X							
91	BH15_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31986			X							
92	BH15_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31987			X							

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Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name:
Project ID: 12545790

Order No.: 12545790
Report #: 774362
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 15, 2021 10:30 AM
Due: Feb 22, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
93	BH15_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31988			X							
94	BH16_0.3-0.4	Feb 12, 2021		Soil	S21-Fe31989			X							
95	BH16_0.5-0.6	Feb 12, 2021		Soil	S21-Fe31990			X							
96	BH16_1.4-1.5	Feb 12, 2021		Soil	S21-Fe31991			X							
97	BH16_1.6-1.7	Feb 12, 2021		Soil	S21-Fe31992			X							
98	BH16_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31993			X							
99	BH17_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31994			X							
100	BH17_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31995			X							
101	BH17_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31996			X							
102	BH19_0.0-0.1	Feb 12, 2021		Soil	S21-Fe31997			X							
103	BH19_1.5-1.6	Feb 12, 2021		Soil	S21-Fe31998			X							

eurofins | Environment Testing

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Sample Detail						Asbestos - AS4964	CANCELLED	HOLD	BTEX	Suite B13: OCP/PCB	BTEX and Naphthalene	Moisture Set	Eurofins Suite B7	BTEX and Naphthalene	BTEX
Melbourne Laboratory - NATA Site # 1254 & 14271															
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794															
Perth Laboratory - NATA Site # 23736															
Mayfield Laboratory															
External Laboratory															
104	BH19_2.0-2.1	Feb 12, 2021		Soil	S21-Fe31999			X							
105	TS01	Feb 08, 2021		Soil	S21-Fe32000									X	
106	TB01	Feb 08, 2021		Soil	S21-Fe32001						X				
107	BH_0.0-0.1	Feb 08, 2021		Soil	S21-Fe41426			X							
Test Counts						7	1	55	1	6	1	47	41	1	1

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

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

Units

mg/kg: milligrams per kilogram | **mg/L:** milligrams per litre | **ug/L:** micrograms per litre

ppm: Parts per million | **ppb:** Parts per billion | **%:** Percentage

org/100mL: Organisms per 100 millilitres | **NTU:** Nephelometric Turbidity Units | **MPN/100mL:** Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Organochlorine Pesticides							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	86			70-130	Pass	
TRH C10-C14	%	77			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	102			70-130	Pass	
Toluene	%	111			70-130	Pass	
Ethylbenzene	%	105			70-130	Pass	
m&p-Xylenes	%	100			70-130	Pass	
o-Xylene	%	101			70-130	Pass	
Xylenes - Total*	%	101			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	108			70-130	Pass	
Naphthalene	%	98			70-130	Pass	
TRH C6-C10	%	84			70-130	Pass	
TRH >C10-C16	%	77			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	82			70-130	Pass	
Acenaphthylene	%	79			70-130	Pass	
Anthracene	%	79			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	%	83			70-130	Pass	
Benzo(a)pyrene	%	85			70-130	Pass	
Benzo(b&j)fluoranthene	%	70			70-130	Pass	
Benzo(g.h.i)perylene	%	84			70-130	Pass	
Benzo(k)fluoranthene	%	84			70-130	Pass	
Chrysene	%	71			70-130	Pass	
Dibenz(a.h)anthracene	%	84			70-130	Pass	
Fluoranthene	%	79			70-130	Pass	
Fluorene	%	76			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	80			70-130	Pass	
Naphthalene	%	81			70-130	Pass	
Phenanthrene	%	80			70-130	Pass	
Pyrene	%	81			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	101			80-120	Pass	
Cadmium	%	100			80-120	Pass	
Chromium	%	103			80-120	Pass	
Copper	%	104			80-120	Pass	
Lead	%	100			80-120	Pass	
Mercury	%	100			80-120	Pass	
Nickel	%	106			80-120	Pass	
Zinc	%	101			80-120	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	111			70-130	Pass	
4.4'-DDD	%	110			70-130	Pass	
4.4'-DDE	%	129			70-130	Pass	
4.4'-DDT	%	128			70-130	Pass	
a-BHC	%	110			70-130	Pass	
Aldrin	%	113			70-130	Pass	
b-BHC	%	116			70-130	Pass	
d-BHC	%	111			70-130	Pass	
Dieldrin	%	109			70-130	Pass	
Endosulfan I	%	113			70-130	Pass	
Endosulfan II	%	107			70-130	Pass	
Endosulfan sulphate	%	98			70-130	Pass	
Endrin	%	109			70-130	Pass	
Endrin aldehyde	%	113			70-130	Pass	
Endrin ketone	%	118			70-130	Pass	
g-BHC (Lindane)	%	119			70-130	Pass	
Heptachlor	%	117			70-130	Pass	
Heptachlor epoxide	%	111			70-130	Pass	
Hexachlorobenzene	%	108			70-130	Pass	
Methoxychlor	%	120			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	129			70-130	Pass	
Aroclor-1260	%	127			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S21-Fe27496	NCP	%	80			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S21-Fe27496	NCP	%	81			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S21-Fe31913	CP	%	79			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S21-Fe31913	CP	%	95			70-130	Pass	
Toluene	S21-Fe31913	CP	%	96			70-130	Pass	
Ethylbenzene	S21-Fe31913	CP	%	98			70-130	Pass	
m&p-Xylenes	S21-Fe31913	CP	%	95			70-130	Pass	
o-Xylene	S21-Fe31913	CP	%	99			70-130	Pass	
Xylenes - Total*	S21-Fe31913	CP	%	97			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S21-Fe31913	CP	%	100			70-130	Pass	
TRH C6-C10	S21-Fe31913	CP	%	79			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S21-Fe31913	CP	%	88			70-130	Pass	
Acenaphthylene	S21-Fe31913	CP	%	85			70-130	Pass	
Anthracene	S21-Fe31913	CP	%	84			70-130	Pass	
Benz(a)anthracene	S21-Fe31913	CP	%	90			70-130	Pass	
Benzo(a)pyrene	S21-Fe31913	CP	%	91			70-130	Pass	
Benzo(g.h.i)perylene	S21-Fe31913	CP	%	88			70-130	Pass	
Benzo(k)fluoranthene	S21-Fe31913	CP	%	85			70-130	Pass	
Chrysene	S21-Fe31913	CP	%	75			70-130	Pass	
Dibenz(a.h)anthracene	S21-Fe31913	CP	%	84			70-130	Pass	
Fluoranthene	S21-Fe31913	CP	%	86			70-130	Pass	
Fluorene	S21-Fe31913	CP	%	81			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31913	CP	%	93			70-130	Pass	
Naphthalene	S21-Fe31913	CP	%	87			70-130	Pass	
Phenanthrene	S21-Fe31913	CP	%	84			70-130	Pass	
Pyrene	S21-Fe31913	CP	%	86			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S21-Fe31913	CP	%	106			75-125	Pass	
Cadmium	S21-Fe31913	CP	%	113			75-125	Pass	
Chromium	S21-Fe31913	CP	%	110			75-125	Pass	
Copper	S21-Fe31913	CP	%	106			75-125	Pass	
Lead	S21-Fe31913	CP	%	105			75-125	Pass	
Mercury	S21-Fe31913	CP	%	109			75-125	Pass	
Nickel	S21-Fe31913	CP	%	108			75-125	Pass	
Zinc	S21-Fe31913	CP	%	107			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S21-Fe31924	CP	%	89			70-130	Pass	
Acenaphthylene	S21-Fe31924	CP	%	88			70-130	Pass	
Anthracene	S21-Fe31924	CP	%	82			70-130	Pass	
Benz(a)anthracene	S21-Fe31924	CP	%	99			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(a)pyrene	S21-Fe31924	CP	%	87			70-130	Pass	
Benzo(b&j)fluoranthene	S21-Fe31924	CP	%	125			70-130	Pass	
Benzo(g.h.i)perylene	S21-Fe31924	CP	%	90			70-130	Pass	
Benzo(k)fluoranthene	S21-Fe31924	CP	%	82			70-130	Pass	
Chrysene	S21-Fe31924	CP	%	87			70-130	Pass	
Dibenz(a.h)anthracene	S21-Fe31924	CP	%	99			70-130	Pass	
Fluoranthene	S21-Fe31924	CP	%	90			70-130	Pass	
Fluorene	S21-Fe31924	CP	%	82			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31924	CP	%	90			70-130	Pass	
Naphthalene	S21-Fe31924	CP	%	87			70-130	Pass	
Phenanthrene	S21-Fe31924	CP	%	83			70-130	Pass	
Pyrene	S21-Fe31924	CP	%	88			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S21-Fe31924	CP	%	103			75-125	Pass	
Cadmium	S21-Fe31924	CP	%	113			75-125	Pass	
Chromium	S21-Fe31924	CP	%	120			75-125	Pass	
Copper	S21-Fe31924	CP	%	95			75-125	Pass	
Lead	S21-Fe31924	CP	%	101			75-125	Pass	
Mercury	S21-Fe31924	CP	%	109			75-125	Pass	
Nickel	S21-Fe31924	CP	%	94			75-125	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S21-Fe26618	NCP	%	107			70-130	Pass	
4.4'-DDD	S21-Fe26618	NCP	%	102			70-130	Pass	
4.4'-DDE	S21-Fe26618	NCP	%	124			70-130	Pass	
4.4'-DDT	S21-Fe26618	NCP	%	113			70-130	Pass	
a-BHC	S21-Fe26618	NCP	%	104			70-130	Pass	
Aldrin	S21-Fe26618	NCP	%	109			70-130	Pass	
b-BHC	S21-Fe26618	NCP	%	110			70-130	Pass	
d-BHC	S21-Fe26618	NCP	%	105			70-130	Pass	
Dieldrin	S21-Fe26618	NCP	%	104			70-130	Pass	
Endosulfan I	S21-Fe26618	NCP	%	113			70-130	Pass	
Endosulfan II	S21-Fe26618	NCP	%	100			70-130	Pass	
Endosulfan sulphate	S21-Fe26618	NCP	%	90			70-130	Pass	
Endrin	S21-Fe26618	NCP	%	104			70-130	Pass	
Endrin aldehyde	S21-Fe26618	NCP	%	78			70-130	Pass	
Endrin ketone	S21-Fe26618	NCP	%	112			70-130	Pass	
g-BHC (Lindane)	S21-Fe26618	NCP	%	114			70-130	Pass	
Heptachlor	S21-Fe26618	NCP	%	109			70-130	Pass	
Heptachlor epoxide	S21-Fe26618	NCP	%	110			70-130	Pass	
Hexachlorobenzene	S21-Fe26618	NCP	%	103			70-130	Pass	
Methoxychlor	S21-Fe26618	NCP	%	106			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	S21-Fe26618	NCP	%	99			70-130	Pass	
Aroclor-1260	S21-Fe26618	NCP	%	101			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31898	CP	%	23	22	5.0	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe31901	CP	mg/kg	700	520	30	30%	Pass	
Cadmium	S21-Fe31901	CP	mg/kg	2.2	2.3	3.0	30%	Pass	
Chromium	S21-Fe31901	CP	mg/kg	77	97	23	30%	Pass	
Copper	S21-Fe31901	CP	mg/kg	1900	2200	14	30%	Pass	
Lead	S21-Fe31901	CP	mg/kg	1400	2900	71	30%	Fail	Q15
Mercury	S21-Fe31901	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Fe31901	CP	mg/kg	56	47	17	30%	Pass	
Zinc	S21-Fe31901	CP	mg/kg	18000	21000	13	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S21-Fe31903	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-Fe31903	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-Fe31903	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S21-Fe31903	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Fe31903	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-Fe31903	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S21-Fe31903	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31909	CP	%	6.4	6.8	6.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31920	CP	%	8.4	7.8	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe31923	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S21-Fe31923	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Fe31923	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S21-Fe31923	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S21-Fe31923	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S21-Fe31923	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Fe31923	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S21-Fe31923	CP	mg/kg	8.8	6.0	39	30%	Fail	Q15
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31930	CP	%	5.6	6.8	19	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S21-Fe31933	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S21-Fe31933	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-Fe31933	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-Fe31933	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S21-Fe31933	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	S21-Fe31933	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S21-Fe31933	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S21-Fe31933	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Fe31933	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-Fe31933	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S21-Fe31933	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S21-Fe31933	CP	mg/kg	11	13	14	30%	Pass	
Cadmium	S21-Fe31933	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Copper	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Lead	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	S21-Fe31933	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S21-Fe31933	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	S21-Fe31934	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S21-Fe31934	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S21-Fe31934	CP	mg/kg	< 50	< 50	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S21-Fe31934	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Fe31934	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S21-Fe31934	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S21-Fe31934	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S21-Fe42089	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S21-Fe42089	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S21-Fe42089	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S21-Fe42089	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1221	S21-Fe26630	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Total PCB*	S21-Fe26630	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S21-Fe31943	CP	%	9.5	10	7.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised by:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

#AU04_Enviro_Sample_NSW

Subject: FW: 5 DAY TAT ADDITIONAL LEACHATES: FW: Eurofins Test Results, Invoice - Report 774362 : Site 12545790

From: Ruth Madden <Ruth.Madden@ghd.com>
Sent: Tuesday, 23 February 2021 3:13 PM
To: Andrew Black <AndrewBlack@eurofins.com>
Subject: RE: Eurofins Test Results, Invoice - Report 774362 : Site 12545790

EXTERNAL EMAIL*

Hi Andrew,

Can I please request TCLP analysis on the following:

Arsenic: BH04_0.3-0.4
Chromium: BH11_0.0-0.1
Lead: BH03_0.0-0.1, BH04_0.3-0.4, BH17_1.0-1.1
Nickel: BH02_0.3-0.4, BH03_0.5-0.6, BH04_0.3-0.4, BH05_1.0-1.1
Benzo(a)pyrene: BH11_0.0-0.1, BH12_0.0-0.1

Thanks,

Ruth

From: AndrewBlack@eurofins.com <AndrewBlack@eurofins.com>
Sent: Tuesday, 23 February 2021 2:36 PM
To: Ruth Madden <Ruth.Madden@ghd.com>
Subject: Eurofins Test Results, Invoice - Report 774362 : Site 12545790

Regards

Andrew Black
Analytical Services Manager

Eurofins | Environment Testing
Unit 7
7 Friesian Close
SANDGATE NSW 2304
AUSTRALIA
Phone: +61 299 008 490
Mobile: +61 410 220 750
Email: AndrewBlack@eurofins.com
Website:environment.eurofins.com.au
EnviroNote 1108 - Emissions from Stationary Sources
EnviroNote 1103 - NATA Accreditation for Dioxins

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eurofins | Environment Testing

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Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name: ADDITIONAL 12545790
Project ID: 12545790

Order No.:
Report #: 775858
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 23, 2021 3:13 PM
Due: Mar 2, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Benzo(a)pyrene	CANCELLED	Chromium	Lead	Nickel	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271											
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
Mayfield Laboratory											
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	BH02_0.3-0.4	Feb 11, 2021		US Leachate	S21-Fe44858					X	X
2	BH03_0.0-0.1	Feb 11, 2021		US Leachate	S21-Fe44859				X		X
3	BH03_0.5-0.6	Feb 11, 2021		US Leachate	S21-Fe44860					X	X
4	BH04_0.3-0.4	Feb 11, 2021		US Leachate	S21-Fe44861		X				
5	BH05_1.0-1.1	Feb 11, 2021		US Leachate	S21-Fe44862					X	X
6	BH11_0.0-0.1	Feb 12, 2021		US Leachate	S21-Fe44863	X		X			X
7	BH12_0.0-0.1	Feb 12, 2021		US Leachate	S21-Fe44864		X				
8	BH17_1.0-1.1	Feb 12, 2021		US Leachate	S21-Fe44865				X		X
Test Counts						1	2	1	2	3	6

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ABN: 50 005 085 521 www.eurofins.com.au EnviroSales@eurofins.com

Australia

Melbourne
6 Monterey Road
Dandenong South VIC 3175
Phone : +61 3 8564 5000
NATA # 1261
Site # 1254 & 14271

Sydney
Unit F3, Building F
16 Mars Road
Lane Cove West NSW 2066
Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
1/21 Smallwood Place
Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Newcastle
4/52 Industrial Drive
Mayfield East NSW 2304
PO Box 60 Wickham 2293
Phone : +61 2 4968 8448

New Zealand

Auckland
35 O'Rorke Road
Penrose, Auckland 1061
Phone : +64 9 526 45 51
IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Sample Receipt Advice

Company name:	GHD Pty Ltd NEWCASTLE
Contact name:	Ruth Madden
Project name:	ADDITIONAL 12545790
Project ID:	12545790
Turnaround time:	5 Day
Date/Time received	Feb 23, 2021 3:13 PM
Eurofins reference	775858

Sample Information

✓	A detailed list of analytes logged into our LIMS, is included in the attached summary table.
✓	Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 21.1 degrees Celsius.
✓	All samples have been received as described on the above COC.
✓	COC has been completed correctly.
✓	Attempt to chill was evident.
✓	Appropriately preserved sample containers have been used.
✓	All samples were received in good condition.
✓	Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
✓	Appropriate sample containers have been used.
✓	Sample containers for volatile analysis received with zero headspace.
X	Split sample sent to requested external lab.
X	Some samples have been subcontracted.
N/A	Custody Seals intact (if used).

Notes

No sample remaining for BH04_0.3-0.4, BH12_0.0-0.1 analysis cancelled.

Contact

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

Andrew Black on phone : (+61) 2 9900 8490 or by email: AndrewBlack@eurofins.com

Results will be delivered electronically via email to Ruth Madden - ruth.madden@ghd.com.

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

GHD Pty Ltd
3/24 Honeysuckle Dve
Newcastle
NSW 2300

Attention: **Ruth Madden**

Report **775858-L**
Project name ADDITIONAL 12545790
Project ID 12545790
Received Date Feb 23, 2021

Client Sample ID			**BH02_0.3-0.4**	**BH03_0.0-0.1**	**BH03_0.5-0.6**	**BH05_1.0-1.1**
Sample Matrix			**US Leachate**	**US Leachate**	**US Leachate**	**US Leachate**
Eurofins Sample No.			**S21-Fe44858**	**S21-Fe44859**	**S21-Fe44860**	**S21-Fe44862**
Date Sampled			**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**	**Feb 11, 2021**
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	0.01	mg/L	-	< 0.01	-	-
Nickel	0.01	mg/L	0.01	-	0.02	< 0.01
USA Leaching Procedure						
Leachate Fluid[C01]		comment	1.0	1.0	1.0	1.0
pH (initial)	0.1	pH Units	8.4	8.4	8.5	8.3
pH (off)	0.1	pH Units	6.2	6.4	6.1	5.1
pH (USA HCl addition)	0.1	pH Units	1.9	1.9	1.9	1.9

Client Sample ID			**BH11_0.0-0.1**	**BH17_1.0-1.1**
Sample Matrix			**US Leachate**	**US Leachate**
Eurofins Sample No.			**S21-Fe44863**	**S21-Fe44865**
Date Sampled			**Feb 12, 2021**	**Feb 12, 2021**
Test/Reference	LOR	Unit		
Heavy Metals				
Chromium	0.05	mg/L	< 0.05	-
Lead	0.01	mg/L	-	< 0.01
USA Leaching Procedure				
Leachate Fluid[C01]		comment	1.0	1.0
pH (initial)	0.1	pH Units	8.5	8.0
pH (off)	0.1	pH Units	5.5	5.1
pH (USA HCl addition)	0.1	pH Units	1.9	1.9
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene	0.001	mg/L	< 0.001	-

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Heavy Metals	Sydney	Feb 26, 2021	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
USA Leaching Procedure	Sydney	Feb 26, 2021	14 Days
- Method: LTM-GEN-7010 Leaching Procedure for Soils & Solid Wastes			
Polycyclic Aromatic Hydrocarbons	Sydney	Feb 26, 2021	7 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			

eurofins | Environment Testing

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IANZ # 1327

Christchurch
43 Detroit Drive
Rolleston, Christchurch 7675
Phone : 0800 856 450
IANZ # 1290

Company Name: GHD Pty Ltd NEWCASTLE
Address: 3/24 Honeysuckle Dve
Newcastle
NSW 2300

Project Name: ADDITIONAL 12545790
Project ID: 12545790

Order No.:
Report #: 775858
Phone: 02 4979 9999
Fax: 02 4979 9988

Received: Feb 23, 2021 3:13 PM
Due: Mar 2, 2021
Priority: 5 Day
Contact Name: Ruth Madden

Eurofins Analytical Services Manager : Andrew Black

Sample Detail						Benzo(a)pyrene	CANCELLED	Chromium	Lead	Nickel	USA Leaching Procedure
Melbourne Laboratory - NATA Site # 1254 & 14271											
Sydney Laboratory - NATA Site # 18217						X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794											
Perth Laboratory - NATA Site # 23736											
Mayfield Laboratory											
External Laboratory											
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**						
1	BH02_0.3-0.4	Feb 11, 2021		US Leachate	S21-Fe44858					X	X
2	BH03_0.0-0.1	Feb 11, 2021		US Leachate	S21-Fe44859				X		X
3	BH03_0.5-0.6	Feb 11, 2021		US Leachate	S21-Fe44860					X	X
4	BH04_0.3-0.4	Feb 11, 2021		US Leachate	S21-Fe44861		X				
5	BH05_1.0-1.1	Feb 11, 2021		US Leachate	S21-Fe44862					X	X
6	BH11_0.0-0.1	Feb 12, 2021		US Leachate	S21-Fe44863	X		X			X
7	BH12_0.0-0.1	Feb 12, 2021		US Leachate	S21-Fe44864		X				
8	BH17_1.0-1.1	Feb 12, 2021		US Leachate	S21-Fe44865				X		X
Test Counts						1	2	1	2	3	6

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

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

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

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

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

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

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

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

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

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Heavy Metals							
Chromium	mg/L	< 0.05			0.05	Pass	
Lead	mg/L	< 0.01			0.01	Pass	
Nickel	mg/L	< 0.01			0.01	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
LCS - % Recovery							
Heavy Metals							
Chromium	%	100			80-120	Pass	
Lead	%	111			80-120	Pass	
Nickel	%	98			80-120	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene	%	81			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Heavy Metals				Result 1					
Nickel	S21-Fe44847	NCP	%	99			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Lead	S21-Fe44847	NCP	%	102			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Chromium	S21-Fe44847	NCP	%	103			75-125	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Benzo(a)pyrene	S21-Fe52196	NCP	%	90			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Chromium	S21-Fe44858	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Lead	S21-Fe44858	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Nickel	S21-Fe44858	CP	mg/L	0.01	0.01	7.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Lead	S21-Fe40738	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Chromium	S21-Fe40738	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Benzo(a)pyrene	S21-Fe49781	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
C01	Leachate Fluid Key: 1 - pH 5.0; 2 - pH 2.9; 3 - pH 9.2; 4 - Reagent (DI) water; 5 - Client sample, 6 - other

Authorised by:

Andrew Black	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)

Glenn Jackson
General Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

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

Appendix D – 95% UCL

1	**UCL Statistics for Data Sets with Non-Detects**											
2												
3	User Selected Options											
4	Date/Time of Computation			ProUCL 5.12/03/2021 3:34:09 PM								
5	From File			WorkSheet.xls								
6	Full Precision			OFF								
7	Confidence Coefficient			95%								
8	Number of Bootstrap Operations			2000								
9												
10	**Lead**											
11												
12	**General Statistics**											
13	Total Number of Observations			37			Number of Distinct Observations			24		
14	Number of Detects			26			Number of Non-Detects			11		
15	Number of Distinct Detects			23			Number of Distinct Non-Detects			1		
16	Minimum Detect			6			Minimum Non-Detect			5		
17	Maximum Detect			1400			Maximum Non-Detect			5		
18	Variance Detects			74716			Percent Non-Detects			29.73%		
19	Mean Detects			98.09			SD Detects			273.3		
20	Median Detects			30			CV Detects			2.787		
21	Skewness Detects			4.689			Kurtosis Detects			22.82		
22	Mean of Logged Detects			3.457			SD of Logged Detects			1.229		
23												
24	**Normal GOF Test on Detects Only**											
25	Shapiro Wilk Test Statistic			0.336			**Shapiro Wilk GOF Test**					
26	5% Shapiro Wilk Critical Value			0.92			Detected Data Not Normal at 5% Significance Level					
27	Lilliefors Test Statistic			0.41			**Lilliefors GOF Test**					
28	5% Lilliefors Critical Value			0.17			Detected Data Not Normal at 5% Significance Level					
29	**Detected Data Not Normal at 5% Significance Level**											
30												
31	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
32	KM Mean			70.41			KM Standard Error of Mean			38.34		
33	KM SD			228.7			95% KM (BCA) UCL			142		
34	95% KM (t) UCL			135.1			95% KM (Percentile Bootstrap) UCL			142.5		
35	95% KM (z) UCL			133.5			95% KM Bootstrap t UCL			497		
36	90% KM Chebyshev UCL			185.4			95% KM Chebyshev UCL			237.5		
37	97.5% KM Chebyshev UCL			309.8			99% KM Chebyshev UCL			451.9		
38												
39	**Gamma GOF Tests on Detected Observations Only**											
40	A-D Test Statistic			2.746			**Anderson-Darling GOF Test**					
41	5% A-D Critical Value			0.803			Detected Data Not Gamma Distributed at 5% Significance Level					
42	K-S Test Statistic			0.284			**Kolmogorov-Smirnov GOF**					
43	5% K-S Critical Value			0.181			Detected Data Not Gamma Distributed at 5% Significance Level					
44	**Detected Data Not Gamma Distributed at 5% Significance Level**											
45												
46	**Gamma Statistics on Detected Data Only**											
47	k hat (MLE)			0.554			k star (bias corrected MLE)			0.516		
48	Theta hat (MLE)			177.1			Theta star (bias corrected MLE)			190.2		
49	nu hat (MLE)			28.8			nu star (bias corrected)			26.81		
50	Mean (detects)			98.09								
51												
52	**Gamma ROS Statistics using Imputed Non-Detects**											
53	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
54	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
55	For such situations, GROS method may yield incorrect values of UCLs and BTVs											

56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58					Minimum	0.01				Mean	68.93	
59					Maximum	1400				Median	16	
60					SD	232.3				CV	3.37	
61					k hat (MLE)	0.227				k star (bias corrected MLE)	0.227	
62					Theta hat (MLE)	303.3				Theta star (bias corrected MLE)	303.8	
63					nu hat (MLE)	16.82				nu star (bias corrected)	16.79	
64					Adjusted Level of Significance (β)	0.0431						
65					Approximate Chi Square Value (16.79, α)	8.522				Adjusted Chi Square Value (16.79, β)	8.266	
66					95% Gamma Approximate UCL (use when n>=50)	135.8				95% Gamma Adjusted UCL (use when n<50)	140	
67												
68	**Estimates of Gamma Parameters using KM Estimates**											
69					Mean (KM)	70.41				SD (KM)	228.7	
70					Variance (KM)	52294				SE of Mean (KM)	38.34	
71					k hat (KM)	0.0948				k star (KM)	0.105	
72					nu hat (KM)	7.016				nu star (KM)	7.781	
73					theta hat (KM)	742.7				theta star (KM)	669.7	
74					80% gamma percentile (KM)	52.42				90% gamma percentile (KM)	191.2	
75					95% gamma percentile (KM)	407.3				99% gamma percentile (KM)	1091	
76												
77	**Gamma Kaplan-Meier (KM) Statistics**											
78					Approximate Chi Square Value (7.78, α)	2.609				Adjusted Chi Square Value (7.78, β)	2.48	
79					95% Gamma Approximate KM-UCL (use when n>=50)	210				95% Gamma Adjusted KM-UCL (use when n<50)	220.9	
80	95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)											
81												
82	**Lognormal GOF Test on Detected Observations Only**											
83					Shapiro Wilk Test Statistic	0.911	**Shapiro Wilk GOF Test**					
84					5% Shapiro Wilk Critical Value	0.92	Detected Data Not Lognormal at 5% Significance Level					
85					Lilliefors Test Statistic	0.134	**Lilliefors GOF Test**					
86					5% Lilliefors Critical Value	0.17	Detected Data appear Lognormal at 5% Significance Level					
87	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
88												
89	**Lognormal ROS Statistics Using Imputed Non-Detects**											
90					Mean in Original Scale	69.56				Mean in Log Scale	2.585	
91					SD in Original Scale	232.1				SD in Log Scale	1.751	
92					95% t UCL (assumes normality of ROS data)	134				95% Percentile Bootstrap UCL	143.4	
93					95% BCA Bootstrap UCL	192.5				95% Bootstrap t UCL	478.2	
94					95% H-UCL (Log ROS)	164.1						
95												
96	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
97					KM Mean (logged)	2.908				KM Geo Mean	18.31	
98					KM SD (logged)	1.317				95% Critical H Value (KM-Log)	2.775	
99					KM Standard Error of Mean (logged)	0.221				95% H-UCL (KM -Log)	80.12	
100					KM SD (logged)	1.317				95% Critical H Value (KM-Log)	2.775	
101					KM Standard Error of Mean (logged)	0.221						
102												
103	**DL/2 Statistics**											
104	**DL/2 Normal**						**DL/2 Log-Transformed**					
105					Mean in Original Scale	69.67				Mean in Log Scale	2.702	
106					SD in Original Scale	232.1				SD in Log Scale	1.56	
107					95% t UCL (Assumes normality)	134.1				95% H-Stat UCL	112.8	
108	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
109												
110	**Nonparametric Distribution Free UCL Statistics**											

	A	B	C	D	E	F	G	H	I	J	K	L
111	**Detected Data appear Approximate Lognormal Distributed at 5% Significance Level**											
112												
113	**Suggested UCL to Use**											
114					KM H-UCL	80.12						
115												
116	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
117	Recommendations are based upon data size, data distribution, and skewness.											
118	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
119	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
120												
121	**Nickel**											
122												
123	**General Statistics**											
124					Total Number of Observations	37			Number of Distinct Observations	15		
125					Number of Detects	21			Number of Non-Detects	16		
126					Number of Distinct Detects	14			Number of Distinct Non-Detects	1		
127					Minimum Detect	5.1			Minimum Non-Detect	5		
128					Maximum Detect	56			Maximum Non-Detect	5		
129					Variance Detects	255.7			Percent Non-Detects	43.24%		
130					Mean Detects	21.2			SD Detects	15.99		
131					Median Detects	18			CV Detects	0.755		
132					Skewness Detects	0.982			Kurtosis Detects	-0.3		
133					Mean of Logged Detects	2.779			SD of Logged Detects	0.771		
134												
135	**Normal GOF Test on Detects Only**											
136					Shapiro Wilk Test Statistic	0.84			**Shapiro Wilk GOF Test**			
137					5% Shapiro Wilk Critical Value	0.908			Detected Data Not Normal at 5% Significance Level			
138					Lilliefors Test Statistic	0.244			**Lilliefors GOF Test**			
139					5% Lilliefors Critical Value	0.188			Detected Data Not Normal at 5% Significance Level			
140	**Detected Data Not Normal at 5% Significance Level**											
141												
142	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
143					KM Mean	14.19			KM Standard Error of Mean	2.398		
144					KM SD	14.23			95% KM (BCA) UCL	18.32		
145					95% KM (t) UCL	18.24			95% KM (Percentile Bootstrap) UCL	18.21		
146					95% KM (z) UCL	18.14			95% KM Bootstrap t UCL	19.83		
147					90% KM Chebyshev UCL	21.39			95% KM Chebyshev UCL	24.64		
148					97.5% KM Chebyshev UCL	29.17			99% KM Chebyshev UCL	38.05		
149												
150	**Gamma GOF Tests on Detected Observations Only**											
151					A-D Test Statistic	0.764			**Anderson-Darling GOF Test**			
152					5% A-D Critical Value	0.754			Detected Data Not Gamma Distributed at 5% Significance Level			
153					K-S Test Statistic	0.155			**Kolmogorov-Smirnov GOF**			
154					5% K-S Critical Value	0.192			Detected data appear Gamma Distributed at 5% Significance Level			
155	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
156												
157	**Gamma Statistics on Detected Data Only**											
158					k hat (MLE)	1.97			k star (bias corrected MLE)	1.72		
159					Theta hat (MLE)	10.76			Theta star (bias corrected MLE)	12.32		
160					nu hat (MLE)	82.74			nu star (bias corrected)	72.26		
161					Mean (detects)	21.2						
162												
163	**Gamma ROS Statistics using Imputed Non-Detects**											
164	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
165	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											

166	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
167	This is especially true when the sample size is small.											
168	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
169					Minimum	0.01				Mean	12.06	
170					Maximum	56				Median	6.7	
171					SD	15.96				CV	1.323	
172					k hat (MLE)	0.258				k star (bias corrected MLE)	0.255	
173					Theta hat (MLE)	46.77				Theta star (bias corrected MLE)	47.3	
174					nu hat (MLE)	19.09				nu star (bias corrected)	18.88	
175					Adjusted Level of Significance (β)	0.0431						
176					Approximate Chi Square Value (18.88, α)	10.03				Adjusted Chi Square Value (18.88, β)	9.746	
177					95% Gamma Approximate UCL (use when n>=50)	22.71				95% Gamma Adjusted UCL (use when n<50)	23.37	
178												
179	**Estimates of Gamma Parameters using KM Estimates**											
180					Mean (KM)	14.19				SD (KM)	14.23	
181					Variance (KM)	202.6				SE of Mean (KM)	2.398	
182					k hat (KM)	0.994				k star (KM)	0.931	
183					nu hat (KM)	73.56				nu star (KM)	68.93	
184					theta hat (KM)	14.28				theta star (KM)	15.24	
185					80% gamma percentile (KM)	22.97				90% gamma percentile (KM)	33.25	
186					95% gamma percentile (KM)	43.6				99% gamma percentile (KM)	67.75	
187												
188	**Gamma Kaplan-Meier (KM) Statistics**											
189					Approximate Chi Square Value (68.93, α)	50.82				Adjusted Chi Square Value (68.93, β)	50.14	
190					95% Gamma Approximate KM-UCL (use when n>=50)	19.25				95% Gamma Adjusted KM-UCL (use when n<50)	19.51	
191												
192	**Lognormal GOF Test on Detected Observations Only**											
193					Shapiro Wilk Test Statistic	0.921				**Shapiro Wilk GOF Test**		
194					5% Shapiro Wilk Critical Value	0.908				Detected Data appear Lognormal at 5% Significance Level		
195					Lilliefors Test Statistic	0.151				**Lilliefors GOF Test**		
196					5% Lilliefors Critical Value	0.188				Detected Data appear Lognormal at 5% Significance Level		
197	**Detected Data appear Lognormal at 5% Significance Level**											
198												
199	**Lognormal ROS Statistics Using Imputed Non-Detects**											
200					Mean in Original Scale	13.14				Mean in Log Scale	1.911	
201					SD in Original Scale	15.18				SD in Log Scale	1.234	
202					95% t UCL (assumes normality of ROS data)	17.35				95% Percentile Bootstrap UCL	17.5	
203					95% BCA Bootstrap UCL	18.11				95% Bootstrap t UCL	18.3	
204					95% H-UCL (Log ROS)	25.07						
205												
206	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
207					KM Mean (logged)	2.273				KM Geo Mean	9.711	
208					KM SD (logged)	0.81				95% Critical H Value (KM-Log)	2.186	
209					KM Standard Error of Mean (logged)	0.137				95% H-UCL (KM -Log)	18.12	
210					KM SD (logged)	0.81				95% Critical H Value (KM-Log)	2.186	
211					KM Standard Error of Mean (logged)	0.137						
212												
213	**DL/2 Statistics**											
214	**DL/2 Normal**									**DL/2 Log-Transformed**		
215					Mean in Original Scale	13.11				Mean in Log Scale	1.974	
216					SD in Original Scale	15.17				SD in Log Scale	1.098	
217					95% t UCL (Assumes normality)	17.32				95% H-Stat UCL	20.78	
218	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
219												
220	**Nonparametric Distribution Free UCL Statistics**											

	A	B	C	D	E	F	G	H	I	J	K	L
221	**Detected Data appear Approximate Gamma Distributed at 5% Significance Level**											
222												
223	**Suggested UCL to Use**											
224	95% KM Adjusted Gamma UCL					19.51	95% GROS Adjusted Gamma UCL					23.37
225												
226	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
227	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
228												
229	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
230	Recommendations are based upon data size, data distribution, and skewness.											
231	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
232	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
233												
234	**Benzo(a)pyrene**											
235												
236	**General Statistics**											
237	Total Number of Observations					37	Number of Distinct Observations					7
238	Number of Detects					6	Number of Non-Detects					31
239	Number of Distinct Detects					6	Number of Distinct Non-Detects					2
240	Minimum Detect					0.5	Minimum Non-Detect					0.5
241	Maximum Detect					2.3	Maximum Non-Detect					2.5
242	Variance Detects					0.439	Percent Non-Detects					83.78%
243	Mean Detects					1.033	SD Detects					0.662
244	Median Detects					0.85	CV Detects					0.641
245	Skewness Detects					1.82	Kurtosis Detects					3.582
246	Mean of Logged Detects					-0.105	SD of Logged Detects					0.549
247												
248	**Normal GOF Test on Detects Only**											
249	Shapiro Wilk Test Statistic					0.799	**Shapiro Wilk GOF Test**					
250	5% Shapiro Wilk Critical Value					0.788	Detected Data appear Normal at 5% Significance Level					
251	Lilliefors Test Statistic					0.293	**Lilliefors GOF Test**					
252	5% Lilliefors Critical Value					0.325	Detected Data appear Normal at 5% Significance Level					
253	**Detected Data appear Normal at 5% Significance Level**											
254												
255	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
256	KM Mean					0.589	KM Standard Error of Mean					0.0579
257	KM SD					0.317	95% KM (BCA) UCL					0.686
258	95% KM (t) UCL					0.687	95% KM (Percentile Bootstrap) UCL					0.691
259	95% KM (z) UCL					0.684	95% KM Bootstrap t UCL					0.783
260	90% KM Chebyshev UCL					0.762	95% KM Chebyshev UCL					0.841
261	97.5% KM Chebyshev UCL					0.95	99% KM Chebyshev UCL					1.165
262												
263	**Gamma GOF Tests on Detected Observations Only**											
264	A-D Test Statistic					0.389	**Anderson-Darling GOF Test**					
265	5% A-D Critical Value					0.7	Detected data appear Gamma Distributed at 5% Significance Level					
266	K-S Test Statistic					0.218	**Kolmogorov-Smirnov GOF**					
267	5% K-S Critical Value					0.334	Detected data appear Gamma Distributed at 5% Significance Level					
268	**Detected data appear Gamma Distributed at 5% Significance Level**											
269												
270	**Gamma Statistics on Detected Data Only**											
271	k hat (MLE)					3.777	k star (bias corrected MLE)					1.999
272	Theta hat (MLE)					0.274	Theta star (bias corrected MLE)					0.517
273	nu hat (MLE)					45.32	nu star (bias corrected)					23.99
274	Mean (detects)					1.033						
275												

276	**Gamma ROS Statistics using Imputed Non-Detects**											
277	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
278	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
279	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
280	This is especially true when the sample size is small.											
281	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
282					Minimum	0.01				Mean	0.176	
283					Maximum	2.3				Median	0.01	
284					SD	0.455				CV	2.579	
285					k hat (MLE)	0.323				k star (bias corrected MLE)	0.314	
286					Theta hat (MLE)	0.547				Theta star (bias corrected MLE)	0.561	
287					nu hat (MLE)	23.87				nu star (bias corrected)	23.26	
288					Adjusted Level of Significance (β)	0.0431						
289					Approximate Chi Square Value (23.26, α)	13.29				Adjusted Chi Square Value (23.26, β)	12.96	
290					95% Gamma Approximate UCL (use when n>=50)	0.309				95% Gamma Adjusted UCL (use when n<50)	0.317	
291												
292	**Estimates of Gamma Parameters using KM Estimates**											
293					Mean (KM)	0.589				SD (KM)	0.317	
294					Variance (KM)	0.1				SE of Mean (KM)	0.0579	
295					k hat (KM)	3.453				k star (KM)	3.191	
296					nu hat (KM)	255.5				nu star (KM)	236.1	
297					theta hat (KM)	0.171				theta star (KM)	0.185	
298					80% gamma percentile (KM)	0.834				90% gamma percentile (KM)	1.031	
299					95% gamma percentile (KM)	1.214				99% gamma percentile (KM)	1.611	
300												
301	**Gamma Kaplan-Meier (KM) Statistics**											
302					Approximate Chi Square Value (236.14, α)	201.6				Adjusted Chi Square Value (236.14, β)	200.2	
303					95% Gamma Approximate KM-UCL (use when n>=50)	0.69				95% Gamma Adjusted KM-UCL (use when n<50)	0.695	
304												
305	**Lognormal GOF Test on Detected Observations Only**											
306					Shapiro Wilk Test Statistic	0.93				**Shapiro Wilk GOF Test**		
307					5% Shapiro Wilk Critical Value	0.788				Detected Data appear Lognormal at 5% Significance Level		
308					Lilliefors Test Statistic	0.191				**Lilliefors GOF Test**		
309					5% Lilliefors Critical Value	0.325				Detected Data appear Lognormal at 5% Significance Level		
310	**Detected Data appear Lognormal at 5% Significance Level**											
311												
312	**Lognormal ROS Statistics Using Imputed Non-Detects**											
313					Mean in Original Scale	0.249				Mean in Log Scale	-2.417	
314					SD in Original Scale	0.437				SD in Log Scale	1.495	
315					95% t UCL (assumes normality of ROS data)	0.37				95% Percentile Bootstrap UCL	0.373	
316					95% BCA Bootstrap UCL	0.421				95% Bootstrap t UCL	0.46	
317					95% H-UCL (Log ROS)	0.578						
318												
319	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
320					KM Mean (logged)	-0.595				KM Geo Mean	0.551	
321					KM SD (logged)	0.3				95% Critical H Value (KM-Log)	1.785	
322					KM Standard Error of Mean (logged)	0.0547				95% H-UCL (KM -Log)	0.631	
323					KM SD (logged)	0.3				95% Critical H Value (KM-Log)	1.785	
324					KM Standard Error of Mean (logged)	0.0547						
325												
326	**DL/2 Statistics**											
327	**DL/2 Normal**									**DL/2 Log-Transformed**		
328					Mean in Original Scale	0.404				Mean in Log Scale	-1.135	
329					SD in Original Scale	0.408				SD in Log Scale	0.568	
330					95% t UCL (Assumes normality)	0.517				95% H-Stat UCL	0.455	

	A	B	C	D	E	F	G	H	I	J	K	L
331	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
332												
333	**Nonparametric Distribution Free UCL Statistics**											
334	**Detected Data appear Normal Distributed at 5% Significance Level**											
335												
336	**Suggested UCL to Use**											
337					95% KM (t) UCL	0.687						
338												
339	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
340	Recommendations are based upon data size, data distribution, and skewness.											
341	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
342	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
343												

Appendix J – 95% UCL

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.12/03/2021 3:34:09 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Arsenic

General Statistics

Total Number of Observations	37	Number of Distinct Observations	28
Number of Detects	34	Number of Non-Detects	3
Number of Distinct Detects	27	Number of Distinct Non-Detects	1
Minimum Detect	3	Minimum Non-Detect	2
Maximum Detect	700	Maximum Non-Detect	2
Variance Detects	14172	Percent Non-Detects	8.108%
Mean Detects	26.43	SD Detects	119
Median Detects	5.45	CV Detects	4.504
Skewness Detects	5.827	Kurtosis Detects	33.96
Mean of Logged Detects	1.853	SD of Logged Detects	0.921

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.191	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.933	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.515	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.15	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	24.45	KM Standard Error of Mean	18.79
KM SD	112.6	95% KM (BCA) UCL	62.24
95% KM (t) UCL	56.18	95% KM (Percentile Bootstrap) UCL	61.83
95% KM (z) UCL	55.36	95% KM Bootstrap t UCL	954.8
90% KM Chebyshev UCL	80.83	95% KM Chebyshev UCL	106.4
97.5% KM Chebyshev UCL	141.8	99% KM Chebyshev UCL	211.4

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	9.222	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.822	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.441	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.161	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.454	k star (bias corrected MLE)	0.433
Theta hat (MLE)	58.24	Theta star (bias corrected MLE)	60.98
nu hat (MLE)	30.86	nu star (bias corrected)	29.47
Mean (detects)	26.43		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58					Minimum	0.01				Mean	24.29	
59					Maximum	700				Median	5	
60					SD	114.2				CV	4.703	
61					k hat (MLE)	0.36				k star (bias corrected MLE)	0.349	
62					Theta hat (MLE)	67.49				Theta star (bias corrected MLE)	69.65	
63					nu hat (MLE)	26.63				nu star (bias corrected)	25.8	
64					Adjusted Level of Significance (β)	0.0431						
65					Approximate Chi Square Value (25.80, α)	15.23				Adjusted Chi Square Value (25.80, β)	14.87	
66					95% Gamma Approximate UCL (use when n>=50)	41.15				95% Gamma Adjusted UCL (use when n<50)	42.13	
67												
68	**Estimates of Gamma Parameters using KM Estimates**											
69					Mean (KM)	24.45				SD (KM)	112.6	
70					Variance (KM)	12684				SE of Mean (KM)	18.79	
71					k hat (KM)	0.0471				k star (KM)	0.0613	
72					nu hat (KM)	3.487				nu star (KM)	4.538	
73					theta hat (KM)	518.8				theta star (KM)	398.7	
74					80% gamma percentile (KM)	6.27				90% gamma percentile (KM)	46.99	
75					95% gamma percentile (KM)	137.7				99% gamma percentile (KM)	488.6	
76												
77	**Gamma Kaplan-Meier (KM) Statistics**											
78					Approximate Chi Square Value (4.54, α)	0.945				Adjusted Chi Square Value (4.54, β)	0.878	
79					95% Gamma Approximate KM-UCL (use when n>=50)	117.4				95% Gamma Adjusted KM-UCL (use when n<50)	126.4	
80	95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)											
81												
82	**Lognormal GOF Test on Detected Observations Only**											
83					Shapiro Wilk Test Statistic	0.573				**Shapiro Wilk GOF Test**		
84					5% Shapiro Wilk Critical Value	0.933				Detected Data Not Lognormal at 5% Significance Level		
85					Lilliefors Test Statistic	0.218				**Lilliefors GOF Test**		
86					5% Lilliefors Critical Value	0.15				Detected Data Not Lognormal at 5% Significance Level		
87	Detected Data Not Lognormal at 5% Significance Level											
88												
89	**Lognormal ROS Statistics Using Imputed Non-Detects**											
90					Mean in Original Scale	24.39				Mean in Log Scale	1.721	
91					SD in Original Scale	114.2				SD in Log Scale	0.992	
92					95% t UCL (assumes normality of ROS data)	56.08				95% Percentile Bootstrap UCL	61.81	
93					95% BCA Bootstrap UCL	81.04				95% Bootstrap t UCL	926.3	
94					95% H-UCL (Log ROS)	13.56						
95												
96	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
97					KM Mean (logged)	1.759				KM Geo Mean	5.809	
98					KM SD (logged)	0.926				95% Critical H Value (KM-Log)	2.306	
99					KM Standard Error of Mean (logged)	0.155				95% H-UCL (KM -Log)	12.73	
100					KM SD (logged)	0.926				95% Critical H Value (KM-Log)	2.306	
101					KM Standard Error of Mean (logged)	0.155						
102												
103	**DL/2 Statistics**											
104	**DL/2 Normal**									**DL/2 Log-Transformed**		
105					Mean in Original Scale	24.37				Mean in Log Scale	1.703	
106					SD in Original Scale	114.2				SD in Log Scale	1.021	
107					95% t UCL (Assumes normality)	56.06				95% H-Stat UCL	13.93	
108	DL/2 is not a recommended method, provided for comparisons and historical reasons											
109												
110	**Nonparametric Distribution Free UCL Statistics**											

111	Data do not follow a Discernible Distribution at 5% Significance Level											
112												
113	Suggested UCL to Use											
114				95% KM (Chebyshev) UCL		106.4						
115												
116	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
117	Recommendations are based upon data size, data distribution, and skewness.											
118	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
119	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
120												
121	Lead											
122												
123	General Statistics											
124				Total Number of Observations		37			Number of Distinct Observations			24
125				Number of Detects		26			Number of Non-Detects			11
126				Number of Distinct Detects		23			Number of Distinct Non-Detects			1
127				Minimum Detect		6			Minimum Non-Detect			5
128				Maximum Detect		1400			Maximum Non-Detect			5
129				Variance Detects		74716			Percent Non-Detects			29.73%
130				Mean Detects		98.09			SD Detects			273.3
131				Median Detects		30			CV Detects			2.787
132				Skewness Detects		4.689			Kurtosis Detects			22.82
133				Mean of Logged Detects		3.457			SD of Logged Detects			1.229
134												
135	Normal GOF Test on Detects Only											
136				Shapiro Wilk Test Statistic		0.336			Shapiro Wilk GOF Test			
137				5% Shapiro Wilk Critical Value		0.92			Detected Data Not Normal at 5% Significance Level			
138				Lilliefors Test Statistic		0.41			Lilliefors GOF Test			
139				5% Lilliefors Critical Value		0.17			Detected Data Not Normal at 5% Significance Level			
140	Detected Data Not Normal at 5% Significance Level											
141												
142	Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs											
143				KM Mean		70.41			KM Standard Error of Mean			38.34
144				KM SD		228.7			95% KM (BCA) UCL			142
145				95% KM (t) UCL		135.1			95% KM (Percentile Bootstrap) UCL			142.5
146				95% KM (z) UCL		133.5			95% KM Bootstrap t UCL			497
147				90% KM Chebyshev UCL		185.4			95% KM Chebyshev UCL			237.5
148				97.5% KM Chebyshev UCL		309.8			99% KM Chebyshev UCL			451.9
149												
150	Gamma GOF Tests on Detected Observations Only											
151				A-D Test Statistic		2.746			Anderson-Darling GOF Test			
152				5% A-D Critical Value		0.803			Detected Data Not Gamma Distributed at 5% Significance Level			
153				K-S Test Statistic		0.284			Kolmogorov-Smirnov GOF			
154				5% K-S Critical Value		0.181			Detected Data Not Gamma Distributed at 5% Significance Level			
155	Detected Data Not Gamma Distributed at 5% Significance Level											
156												
157	Gamma Statistics on Detected Data Only											
158				k hat (MLE)		0.554			k star (bias corrected MLE)			0.516
159				Theta hat (MLE)		177.1			Theta star (bias corrected MLE)			190.2
160				nu hat (MLE)		28.8			nu star (bias corrected)			26.81
161				Mean (detects)		98.09						
162												
163	Gamma ROS Statistics using Imputed Non-Detects											
164	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
165	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											

166	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
167	This is especially true when the sample size is small.											
168	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
169					Minimum	0.01				Mean	68.93	
170					Maximum	1400				Median	16	
171					SD	232.3				CV	3.37	
172					k hat (MLE)	0.227				k star (bias corrected MLE)	0.227	
173					Theta hat (MLE)	303.3				Theta star (bias corrected MLE)	303.8	
174					nu hat (MLE)	16.82				nu star (bias corrected)	16.79	
175					Adjusted Level of Significance (β)	0.0431						
176					Approximate Chi Square Value (16.79, α)	8.522				Adjusted Chi Square Value (16.79, β)	8.266	
177					95% Gamma Approximate UCL (use when n>=50)	135.8				95% Gamma Adjusted UCL (use when n<50)	140	
178												
179	**Estimates of Gamma Parameters using KM Estimates**											
180					Mean (KM)	70.41				SD (KM)	228.7	
181					Variance (KM)	52294				SE of Mean (KM)	38.34	
182					k hat (KM)	0.0948				k star (KM)	0.105	
183					nu hat (KM)	7.016				nu star (KM)	7.781	
184					theta hat (KM)	742.7				theta star (KM)	669.7	
185					80% gamma percentile (KM)	52.42				90% gamma percentile (KM)	191.2	
186					95% gamma percentile (KM)	407.3				99% gamma percentile (KM)	1091	
187												
188	**Gamma Kaplan-Meier (KM) Statistics**											
189					Approximate Chi Square Value (7.78, α)	2.609				Adjusted Chi Square Value (7.78, β)	2.48	
190					95% Gamma Approximate KM-UCL (use when n>=50)	210				95% Gamma Adjusted KM-UCL (use when n<50)	220.9	
191	95% Gamma Adjusted KM-UCL (use when k<=1 and 15 < n < 50)											
192												
193	**Lognormal GOF Test on Detected Observations Only**											
194					Shapiro Wilk Test Statistic	0.911				**Shapiro Wilk GOF Test**		
195					5% Shapiro Wilk Critical Value	0.92				Detected Data Not Lognormal at 5% Significance Level		
196					Lilliefors Test Statistic	0.134				**Lilliefors GOF Test**		
197					5% Lilliefors Critical Value	0.17				Detected Data appear Lognormal at 5% Significance Level		
198	**Detected Data appear Approximate Lognormal at 5% Significance Level**											
199												
200	**Lognormal ROS Statistics Using Imputed Non-Detects**											
201					Mean in Original Scale	69.56				Mean in Log Scale	2.585	
202					SD in Original Scale	232.1				SD in Log Scale	1.751	
203					95% t UCL (assumes normality of ROS data)	134				95% Percentile Bootstrap UCL	143.4	
204					95% BCA Bootstrap UCL	192.5				95% Bootstrap t UCL	478.2	
205					95% H-UCL (Log ROS)	164.1						
206												
207	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
208					KM Mean (logged)	2.908				KM Geo Mean	18.31	
209					KM SD (logged)	1.317				95% Critical H Value (KM-Log)	2.775	
210					KM Standard Error of Mean (logged)	0.221				95% H-UCL (KM -Log)	80.12	
211					KM SD (logged)	1.317				95% Critical H Value (KM-Log)	2.775	
212					KM Standard Error of Mean (logged)	0.221						
213												
214	**DL/2 Statistics**											
215	**DL/2 Normal**									**DL/2 Log-Transformed**		
216					Mean in Original Scale	69.67				Mean in Log Scale	2.702	
217					SD in Original Scale	232.1				SD in Log Scale	1.56	
218					95% t UCL (Assumes normality)	134.1				95% H-Stat UCL	112.8	
219	**DL/2 is not a recommended method, provided for comparisons and historical reasons**											
220												

	A	B	C	D	E	F	G	H	I	J	K	L
221	**Nonparametric Distribution Free UCL Statistics**											
222	**Detected Data appear Approximate Lognormal Distributed at 5% Significance Level**											
223												
224	**Suggested UCL to Use**											
225					KM H-UCL	80.12						
226												
227	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
228	Recommendations are based upon data size, data distribution, and skewness.											
229	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
230	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
231												
232	**Nickel**											
233												
234	**General Statistics**											
235					Total Number of Observations	37			Number of Distinct Observations	15		
236					Number of Detects	21			Number of Non-Detects	16		
237					Number of Distinct Detects	14			Number of Distinct Non-Detects	1		
238					Minimum Detect	5.1			Minimum Non-Detect	5		
239					Maximum Detect	56			Maximum Non-Detect	5		
240					Variance Detects	255.7			Percent Non-Detects	43.24%		
241					Mean Detects	21.2			SD Detects	15.99		
242					Median Detects	18			CV Detects	0.755		
243					Skewness Detects	0.982			Kurtosis Detects	-0.3		
244					Mean of Logged Detects	2.779			SD of Logged Detects	0.771		
245												
246	**Normal GOF Test on Detects Only**											
247					Shapiro Wilk Test Statistic	0.84			**Shapiro Wilk GOF Test**			
248					5% Shapiro Wilk Critical Value	0.908			Detected Data Not Normal at 5% Significance Level			
249					Lilliefors Test Statistic	0.244			**Lilliefors GOF Test**			
250					5% Lilliefors Critical Value	0.188			Detected Data Not Normal at 5% Significance Level			
251	**Detected Data Not Normal at 5% Significance Level**											
252												
253	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
254					KM Mean	14.19			KM Standard Error of Mean	2.398		
255					KM SD	14.23			95% KM (BCA) UCL	18.32		
256					95% KM (t) UCL	18.24			95% KM (Percentile Bootstrap) UCL	18.21		
257					95% KM (z) UCL	18.14			95% KM Bootstrap t UCL	19.83		
258					90% KM Chebyshev UCL	21.39			95% KM Chebyshev UCL	24.64		
259					97.5% KM Chebyshev UCL	29.17			99% KM Chebyshev UCL	38.05		
260												
261	**Gamma GOF Tests on Detected Observations Only**											
262					A-D Test Statistic	0.764			**Anderson-Darling GOF Test**			
263					5% A-D Critical Value	0.754			Detected Data Not Gamma Distributed at 5% Significance Level			
264					K-S Test Statistic	0.155			**Kolmogorov-Smirnov GOF**			
265					5% K-S Critical Value	0.192			Detected data appear Gamma Distributed at 5% Significance Level			
266	**Detected data follow Appr. Gamma Distribution at 5% Significance Level**											
267												
268	**Gamma Statistics on Detected Data Only**											
269					k hat (MLE)	1.97			k star (bias corrected MLE)	1.72		
270					Theta hat (MLE)	10.76			Theta star (bias corrected MLE)	12.32		
271					nu hat (MLE)	82.74			nu star (bias corrected)	72.26		
272					Mean (detects)	21.2						
273												
274	**Gamma ROS Statistics using Imputed Non-Detects**											
275	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											

276	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
277	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
278	This is especially true when the sample size is small.											
279	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
280					Minimum	0.01				Mean	12.06	
281					Maximum	56				Median	6.7	
282					SD	15.96				CV	1.323	
283					k hat (MLE)	0.258				k star (bias corrected MLE)	0.255	
284					Theta hat (MLE)	46.77				Theta star (bias corrected MLE)	47.3	
285					nu hat (MLE)	19.09				nu star (bias corrected)	18.88	
286					Adjusted Level of Significance (β)	0.0431						
287					Approximate Chi Square Value (18.88, α)	10.03				Adjusted Chi Square Value (18.88, β)	9.746	
288					95% Gamma Approximate UCL (use when n>=50)	22.71				95% Gamma Adjusted UCL (use when n<50)	23.37	
289												
290	**Estimates of Gamma Parameters using KM Estimates**											
291					Mean (KM)	14.19				SD (KM)	14.23	
292					Variance (KM)	202.6				SE of Mean (KM)	2.398	
293					k hat (KM)	0.994				k star (KM)	0.931	
294					nu hat (KM)	73.56				nu star (KM)	68.93	
295					theta hat (KM)	14.28				theta star (KM)	15.24	
296					80% gamma percentile (KM)	22.97				90% gamma percentile (KM)	33.25	
297					95% gamma percentile (KM)	43.6				99% gamma percentile (KM)	67.75	
298												
299	**Gamma Kaplan-Meier (KM) Statistics**											
300					Approximate Chi Square Value (68.93, α)	50.82				Adjusted Chi Square Value (68.93, β)	50.14	
301					95% Gamma Approximate KM-UCL (use when n>=50)	19.25				95% Gamma Adjusted KM-UCL (use when n<50)	19.51	
302												
303	**Lognormal GOF Test on Detected Observations Only**											
304					Shapiro Wilk Test Statistic	0.921				**Shapiro Wilk GOF Test**		
305					5% Shapiro Wilk Critical Value	0.908				Detected Data appear Lognormal at 5% Significance Level		
306					Lilliefors Test Statistic	0.151				**Lilliefors GOF Test**		
307					5% Lilliefors Critical Value	0.188				Detected Data appear Lognormal at 5% Significance Level		
308	Detected Data appear Lognormal at 5% Significance Level											
309												
310	**Lognormal ROS Statistics Using Imputed Non-Detects**											
311					Mean in Original Scale	13.14				Mean in Log Scale	1.911	
312					SD in Original Scale	15.18				SD in Log Scale	1.234	
313					95% t UCL (assumes normality of ROS data)	17.35				95% Percentile Bootstrap UCL	17.5	
314					95% BCA Bootstrap UCL	18.11				95% Bootstrap t UCL	18.3	
315					95% H-UCL (Log ROS)	25.07						
316												
317	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
318					KM Mean (logged)	2.273				KM Geo Mean	9.711	
319					KM SD (logged)	0.81				95% Critical H Value (KM-Log)	2.186	
320					KM Standard Error of Mean (logged)	0.137				95% H-UCL (KM -Log)	18.12	
321					KM SD (logged)	0.81				95% Critical H Value (KM-Log)	2.186	
322					KM Standard Error of Mean (logged)	0.137						
323												
324	**DL/2 Statistics**											
325	**DL/2 Normal**									**DL/2 Log-Transformed**		
326					Mean in Original Scale	13.11				Mean in Log Scale	1.974	
327					SD in Original Scale	15.17				SD in Log Scale	1.098	
328					95% t UCL (Assumes normality)	17.32				95% H-Stat UCL	20.78	
329	DL/2 is not a recommended method, provided for comparisons and historical reasons											
330												

331	**Nonparametric Distribution Free UCL Statistics**											
332	**Detected Data appear Approximate Gamma Distributed at 5% Significance Level**											
333												
334	**Suggested UCL to Use**											
335					95% KM Adjusted Gamma UCL	19.51				95% GROS Adjusted Gamma UCL	23.37	
336												
337	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
338	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
339												
340	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
341	Recommendations are based upon data size, data distribution, and skewness.											
342	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
343	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
344												
345	**Benzo(a)pyrene**											
346												
347	**General Statistics**											
348					Total Number of Observations	37				Number of Distinct Observations	7	
349					Number of Detects	6				Number of Non-Detects	31	
350					Number of Distinct Detects	6				Number of Distinct Non-Detects	2	
351					Minimum Detect	0.5				Minimum Non-Detect	0.5	
352					Maximum Detect	2.3				Maximum Non-Detect	2.5	
353					Variance Detects	0.439				Percent Non-Detects	83.78%	
354					Mean Detects	1.033				SD Detects	0.662	
355					Median Detects	0.85				CV Detects	0.641	
356					Skewness Detects	1.82				Kurtosis Detects	3.582	
357					Mean of Logged Detects	-0.105				SD of Logged Detects	0.549	
358												
359	**Normal GOF Test on Detects Only**											
360					Shapiro Wilk Test Statistic	0.799				**Shapiro Wilk GOF Test**		
361					5% Shapiro Wilk Critical Value	0.788				Detected Data appear Normal at 5% Significance Level		
362					Lilliefors Test Statistic	0.293				**Lilliefors GOF Test**		
363					5% Lilliefors Critical Value	0.325				Detected Data appear Normal at 5% Significance Level		
364	**Detected Data appear Normal at 5% Significance Level**											
365												
366	**Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs**											
367					KM Mean	0.589				KM Standard Error of Mean	0.0579	
368					KM SD	0.317				95% KM (BCA) UCL	0.686	
369					95% KM (t) UCL	0.687				95% KM (Percentile Bootstrap) UCL	0.691	
370					95% KM (z) UCL	0.684				95% KM Bootstrap t UCL	0.783	
371					90% KM Chebyshev UCL	0.762				95% KM Chebyshev UCL	0.841	
372					97.5% KM Chebyshev UCL	0.95				99% KM Chebyshev UCL	1.165	
373												
374	**Gamma GOF Tests on Detected Observations Only**											
375					A-D Test Statistic	0.389				**Anderson-Darling GOF Test**		
376					5% A-D Critical Value	0.7				Detected data appear Gamma Distributed at 5% Significance Level		
377					K-S Test Statistic	0.218				**Kolmogorov-Smirnov GOF**		
378					5% K-S Critical Value	0.334				Detected data appear Gamma Distributed at 5% Significance Level		
379	**Detected data appear Gamma Distributed at 5% Significance Level**											
380												
381	**Gamma Statistics on Detected Data Only**											
382					k hat (MLE)	3.777				k star (bias corrected MLE)	1.999	
383					Theta hat (MLE)	0.274				Theta star (bias corrected MLE)	0.517	
384					nu hat (MLE)	45.32				nu star (bias corrected)	23.99	
385					Mean (detects)	1.033						

386												
387	**Gamma ROS Statistics using Imputed Non-Detects**											
388	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
389	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
390	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
391	This is especially true when the sample size is small.											
392	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
393					Minimum	0.01				Mean	0.176	
394					Maximum	2.3				Median	0.01	
395					SD	0.455				CV	2.579	
396					k hat (MLE)	0.323				k star (bias corrected MLE)	0.314	
397					Theta hat (MLE)	0.547				Theta star (bias corrected MLE)	0.561	
398					nu hat (MLE)	23.87				nu star (bias corrected)	23.26	
399					Adjusted Level of Significance (β)	0.0431						
400					Approximate Chi Square Value (23.26, α)	13.29				Adjusted Chi Square Value (23.26, β)	12.96	
401					95% Gamma Approximate UCL (use when n>=50)	0.309				95% Gamma Adjusted UCL (use when n<50)	0.317	
402												
403	**Estimates of Gamma Parameters using KM Estimates**											
404					Mean (KM)	0.589				SD (KM)	0.317	
405					Variance (KM)	0.1				SE of Mean (KM)	0.0579	
406					k hat (KM)	3.453				k star (KM)	3.191	
407					nu hat (KM)	255.5				nu star (KM)	236.1	
408					theta hat (KM)	0.171				theta star (KM)	0.185	
409					80% gamma percentile (KM)	0.834				90% gamma percentile (KM)	1.031	
410					95% gamma percentile (KM)	1.214				99% gamma percentile (KM)	1.611	
411												
412	**Gamma Kaplan-Meier (KM) Statistics**											
413					Approximate Chi Square Value (236.14, α)	201.6				Adjusted Chi Square Value (236.14, β)	200.2	
414					95% Gamma Approximate KM-UCL (use when n>=50)	0.69				95% Gamma Adjusted KM-UCL (use when n<50)	0.695	
415												
416	**Lognormal GOF Test on Detected Observations Only**											
417					Shapiro Wilk Test Statistic	0.93				**Shapiro Wilk GOF Test**		
418					5% Shapiro Wilk Critical Value	0.788				Detected Data appear Lognormal at 5% Significance Level		
419					Lilliefors Test Statistic	0.191				**Lilliefors GOF Test**		
420					5% Lilliefors Critical Value	0.325				Detected Data appear Lognormal at 5% Significance Level		
421	Detected Data appear Lognormal at 5% Significance Level											
422												
423	**Lognormal ROS Statistics Using Imputed Non-Detects**											
424					Mean in Original Scale	0.249				Mean in Log Scale	-2.417	
425					SD in Original Scale	0.437				SD in Log Scale	1.495	
426					95% t UCL (assumes normality of ROS data)	0.37				95% Percentile Bootstrap UCL	0.373	
427					95% BCA Bootstrap UCL	0.421				95% Bootstrap t UCL	0.46	
428					95% H-UCL (Log ROS)	0.578						
429												
430	**Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution**											
431					KM Mean (logged)	-0.595				KM Geo Mean	0.551	
432					KM SD (logged)	0.3				95% Critical H Value (KM-Log)	1.785	
433					KM Standard Error of Mean (logged)	0.0547				95% H-UCL (KM -Log)	0.631	
434					KM SD (logged)	0.3				95% Critical H Value (KM-Log)	1.785	
435					KM Standard Error of Mean (logged)	0.0547						
436												
437	**DL/2 Statistics**											
438	**DL/2 Normal**									**DL/2 Log-Transformed**		
439					Mean in Original Scale	0.404				Mean in Log Scale	-1.135	
440					SD in Original Scale	0.408				SD in Log Scale	0.568	

	A	B	C	D	E	F	G	H	I	J	K	L
441				95% t UCL (Assumes normality)		0.517					95% H-Stat UCL	0.455
442	DL/2 is not a recommended method, provided for comparisons and historical reasons											
443												
444	Nonparametric Distribution Free UCL Statistics											
445	Detected Data appear Normal Distributed at 5% Significance Level											
446												
447	Suggested UCL to Use											
448					95% KM (t) UCL	0.687						
449												
450	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
451	Recommendations are based upon data size, data distribution, and skewness.											
452	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
453	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
454												

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